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TANGANYIKA TERRITORY

Annual Report of the Medical Department

for year ended 31st December

1937

including the Annual Report of
the Medical Laboratory,
Dar es Salaam

1938
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OFFICE OF THE
DIRECTOR OF MEDICAL SERVICES
DAR ES SALAAM
TANGANYIKA TERRITORY
30th May 1938

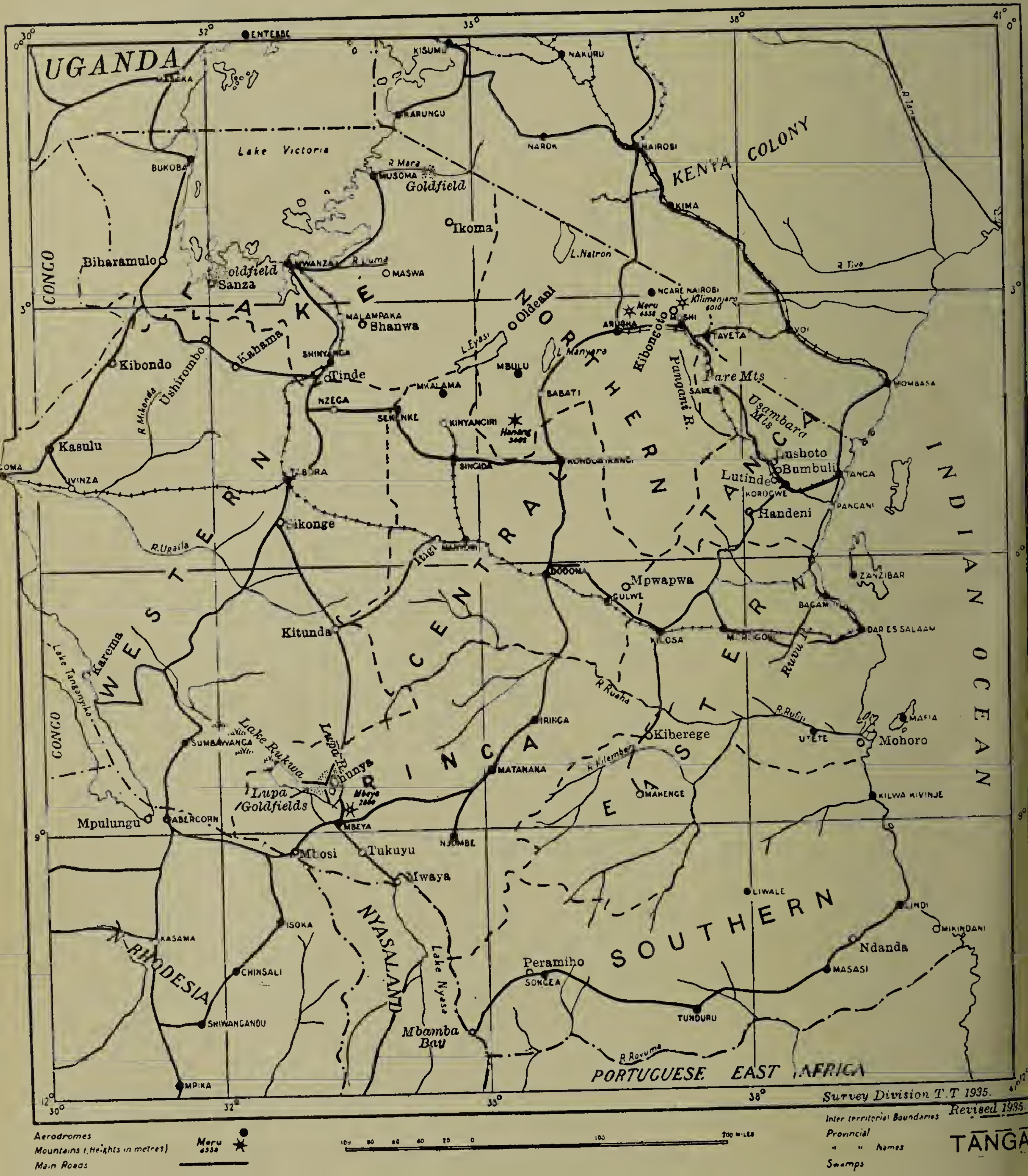
Sir,

I have the honour to submit, for the information of His Excellency the Governor, and for transmission to the Right Honourable the Secretary of State for the Colonies, the Medical Report on the health and sanitary condition of the Tanganyika Territory for the year 1937. This report was written during the absence on leave from the Territory of Dr R. R. Scott, M.C., the Director of Medical Services. The annual report of the Senior Pathologist is included.

I have the honour to be,
Sir,
Your obedient servant,
G. MACLEAN
Deputy Director of Medical Services

THE HONOURABLE
THE CHIEF SECRETARY TO THE GOVERNMENT
DAR ES SALAAM

TANGANYIKA TERRITORY.



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(By Dr H. J. O'D. Burke-Gaffney, *Senior Pathologist*)

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TANGANYIKA TERRITORY

Annual Medical Report for the Year 1937

INTRODUCTORY

During 1937 outbreaks of plague and cerebro-spinal fever, and the care of labourers in regular employment called for special attention.

Plague is dealt with in the appropriate section on page 29 and in the notes on the Lake province (in which the main outbreak occurred) on page 43. So far as human infection is concerned the disease was practically stamped out by August and there was no recurrence for the rest of the year.

Cases of cerebro-spinal fever occurred in every province except the Central, the greatest number being in the Eastern (mostly in Kilosa) where 116 cases occurred. This disease is dealt with on page 31.

Other infectious diseases gave no undue cause for anxiety. Smallpox remains endemic in the Southern province and a few cases have been met with in the Southern Highlands province. A small outbreak in Morogoro district, (Eastn Prov which was readily controlled, was traced to immigrants from the Southern province. The incidence of sleeping sickness continues to diminish.

The health of labourers on sisal estates caused a considerable amount of anxiety, particularly in Morogoro district. The findings in this district illustrate very clearly the problems associated with the care of labourers in this Territory. Some natives make a practice of going out to work on plantations periodically and very often the same man returns repeatedly to the same estate, or at least to the same management. Most of such labourers are, as a rule, capable of looking after themselves. Those who leave their own districts for the first time or who are obliged to go out occasionally through force of circumstances are in a different category. They find the journey, the new environment on arrival, the work, the food, the absence of home life, all strange to them. Added to this there is the risk of contracting new infections from alien tribes. The labourer who is obliged to go out to work because he fails to support himself and his family at home is not unlikely to be anaemic and under-nourished, and a bad subject to fit into a new environment; but even those who leave home in moderately good health may find employment under new conditions a strain. In spite of these drawbacks many of the raw labourers actually improve physically with regular work and feeding, and attention to injuries and ailments. On the other hand there are some who, for various reasons, fail to work regularly; there is a tendency for irregular or improper feeding to go with irregular work, and ill-health follows. Certain native practices add to the difficulties of labour welfare. Even when skilled medical attention is available the raw native may waste days, possibly weeks, using or searching for indigenous remedies, before he reports sick. It may be difficult too to train him in those habits of camp sanitation which would prevent the spread of intestinal infections. Even in the matter of diet the tired and feckless labourer, though he has money or "vouchers" with which to buy suitable food, may neglect himself unless rations are actually provided. The remedy for these maladjustments is to be found in better discipline and in a more sympathetic understanding of the native by his employer.

The examination of people who present themselves as potential labourers perhaps gives a better idea of the ordinary standard of fitness among the more backward sections of the community than is obtained from a study of hospital returns. This source of information has not yet been fully utilized but the information available indicates that a sub-normal state of health from undernourishment and parasitic infection is not uncommon.

The state of nutrition of the general population received special attention during the year. Acting on instructions received from the Secretary of State, Government appointed a committee "to report and advise on Human Nutrition in the Tanganyika Territory." Their report was published towards the end of the year. The investigations of the committee demonstrated clearly the wide gaps that still exist in our knowledge of the nutrition of the general population of the Territory. In their review of the present knowledge of human nutrition in the Territory the committee state :—

> "It is generally agreed that those who live in stock areas are more energetic, that the majority of the population does not get enough meat and milk, and that there is an annual period of food shortage between harvests. It is recognized that a large number of stock-owners do not avail themselves of the opportunity to eat more meat because they regard their stock as currency.
>
> Taboos and tradition are also important factors and these are sometimes the cause of a lack of sufficient proteins and vitamins, such as are contained in eggs and milk. Taboos are known to operate even when there is a shortage of staple articles of diet and foodstuffs which are taboo are available.
>
> We have no definite information whether any tribe suffers as a unit in a prosperous year from food deficiency, though cases of malnutrition are common enough when staple crops fail or are seriously short. Primary mineral insufficiency has not yet been reported in man in this territory. Deficiency diseases have been reported in many districts, particularly beriberi and rickets in the Tanga province and scurvy in the Southern Highlands province (Lupa area).
>
> We cannot accept as proven by facts, on the information available to us, that a general state of malnutrition exists amongst Africans in the Territory, or state with any accuracy the extent and prevalence of its existence. We have not exact information to indicate how far conditions of malnutrition are complicated by parasitic infections nor how far deficient nutrition causes or increases susceptibility to parasitic disease."

In particular the need was pointed out for exact knowledge of the African's dietary needs and of the extent to which local foodstuffs are available to meet them, for comprehensive nutritional surveys, and for studies of culinary and storage methods.

Though more funds were available for medical work in 1937 than in the previous year no substantial extension of services was undertaken. The additional expenditure, which amounted to £15,544, was for the most part absorbed by increments to existing staff, by increases of staff for existing centres and in meeting increasing demands for equipment, drugs and upkeep. Though there has been little in the way of new services, the increasing popularity of hospitals and dispensaries makes a growing demand on the resources of the department. This year again showed an increase in the number of patients treated, there being 4,921 more in-patients and 23,574 more out-patients treated at general hospitals than during the previous year. With the increase in the work of the hospitals there is corresponding increase in the routine work carried out by the laboratory staff. A total of 10,234 more specimens were examined in 1937 than in the previous year.

Many of the conditions for the treatment of which there is an increasing demand can be dealt with by trained African personnel, and the training of Africans is regarded as one of the chief functions of the department. This function, however, is one which can only be developed in association with the department of Education and at the present time there are not enough educated Africans to meet the demand. This is not due to a lack of intelligent boys; there appear to be more boys who are capable of taking at least the lower standards of a secondary course than can be accommodated in the existing schools. The need for providing more educational facilities is realized by Government and steps are already being taken to improve the position. The value of trained Africans is well illustrated in Tanga where a clinical laboratory with an African in charge, working under the Senior Medical Officer, was opened in March. Over ten thousand specimens were examined at this laboratory and they included examinations for Vidal and Kahn reactions. The African in charge was trained at the Dar es Salaam medical school and the general laboratory.

In connection with maternity and child welfare work I have to record with great regret the death of Miss A. A. Howorth, who for nearly nine years was a keen and conscientious worker in this branch.

Following upon the research carried out on malaria during the past seven years, extensive drainage works, estimated to cost £27,000, are being carried out in Dar es Salaam. These works, begun in 1936, are expected to be completed in 1940. The cost of these works is being met by a grant from the Colonial Development Fund.

Research into the influence on the infectability to man of the passage through ruminants of *Trypanosoma rhodesiense* and on related problems is being continued by Dr Corson at Tinde. The cost of this research is also met by a grant from the Colonial Development Fund.

Dr Alan Mozley, a research worker from the London School of Hygiene and Tropical Medicine, arrived in February. He is carrying out investigations into the snail hosts of schistosomes and into measures for snail control. Dr Hawking, a research worker appointed by the Tropical Medical Research Committee, arrived in November. He is carrying out observations on *Wuchereria* and hopes, later on, to make investigations into the penetration of arsenical compounds into the cerebro-spinal fluid in cases of sleeping sickness.

Professor Kleine of the Robert Koch Institute, Berlin, and Professor Grober of the University of Jena, were among the distinguished medical workers who visited the country during the year.

Our congratulations go to Mr C. Macquarie, Agricultural Surveyor, who was awarded the M.B.E. in the New Year's Honours List. Mr Macquarie was the first agricultural surveyor to be appointed to the department and has rendered valuable service in connection with sleeping sickness work since 1926.

The legislative measures which were enacted during the year include the Pharmacy and Poisons Ordinance, and the Lunacy Ordinance. The former ordinance is based on the provisions of the 1933 Poisons and Pharmacy Act of the United Kingdom adapted to local conditions in this Territory. The Lunacy Ordinance which takes the place of the Indian Lunacy Act of 1912, provides for the custody of persons who are incapable of looking after themselves or are dangerous, and for the management and administration of the estates of persons of unsound mind. It also makes provision for the repatriation of nationals of other countries who are found to be of unsound mind in this Territory. The ordinance is based on the principles of modern English legislation, but some terms, which are no longer in current use in England, are still retained in respect of persons who were placed in custody under the applied Indian Lunacy Act.

Reference was made in last year's report to the reorganization of the department's activities on provincial lines in the Lake, Western and Tanga provinces. The work of reorganization was consolidated in these provinces in 1937, but the system was not extended to other provinces. Arrangements were however made in the Southern province whereby the Medical Officer, Lindi, will take over the medical administration of the districts of Lindi, Mikindani, Newala and Masasi at the beginning of 1938.

The provincial system of medical administration is proving its value. It permits a readier exchange of ideas, it makes for standardization where this is desirable and it provides better supervision of the smaller units. For these reasons it is more efficient than a system of direct central control, but it is not cheaper. The provincial system means more office staff and more travelling expenses and, with the raising of the standard of work and the popularizing of medicine in the outstations, the costs, in spite of improved methods, increase.

In spite of increases in authorized expenditure it becomes more difficult each year to satisfy the increased demands of the public from available funds. Arrangements are being made to erect private hospital wards for Africans in some of the larger towns, into which only paying patients will be admitted. Non-Africans already pay fees, though not always on a scale that will cover the costs. A readjustment of some of these fees may shortly be required so that additional provision can be made for "private" patients of all races without loss to Government. Where medical treatment is free it should primarily be so for diseases that menace the safety of the community or hamper its development; and the outlay should be made in respect of conditions in which cure or control will repay the costs. It is not desirable or practicable to introduce this principle in its entirety into the administration of most general hospitals, where, for humanitarian and political reasons, much work must be done which is of little value to the community as a whole, but it is a principle which can be given a dominant place in the future extensions of medical services, and, though this applies particularly to preventive measures, it can and should, be made to apply to curative medicine as well.

The elaboration of this principle implies some close co-operation, not only with the provincial administration, but with the technical departments which are concerned with the agriculture and animal husbandry of the Territory. In this connection it is gratifying to be able to record that a great measure of co-operation already exists, and that the departments concerned are fully alive to the importance of knitting together the functions of their respective staffs.

I.—ADMINISTRATION

(A).—General

1. *Staff*

(a) Tables showing the authorized establishment of the department and details of appointments and casualties are given on pages 53-55.

(b) *Courses of instruction attended in Europe and academic distinctions awarded.*—Dr H. Fairbairn attended the examination for the Membership of the Royal College of Physicians held in London.

Dr C. Wilcocks paid the following visits for the purpose of studying tuberculosis: (i) One month at the Brompton Hospital for diseases of the chest. (ii) Two weeks at the Papworth Village Settlement and Sanatorium. (iii) Two weeks with Sir Henry Gauvain at his hospital for surgical tuberculosis at Alton. (iv) Three weeks studying silicosis and silico-tuberculosis with Professor Lyle Cummins at Cardiff and Dr S. Roodhouse-Gloyne at the City of London Hospital. (v) One week studying tuberculosis in children at the Great Ormond Street Hospital, London, and visiting the Preston Hall Village Settlement.

Dr J. Harkness obtained the Fellowship of the Royal College of Surgeons of Edinburgh.

Dr R. C. Speirs attended a course of instruction in general hospital practice, surgery, gynaecology and diseases of the ear, nose and throat at the West London Hospital Post-Graduate College.

Dr D. V. Latham attended the examination for the Fellowship of the Royal College of Surgeons, Edinburgh.

Dr W. A. Young attended the Wellcome Bureau of Medical Research for the purpose of studying the laboratory aspects of such virus diseases as yellow fever, Rift Valley fever and Lymphogranuloma.

Dr K. Edmundson attended a course of study at Liverpool for the degree of Master of Surgery.

Dr R. Mackay attended (i) the Department of Entomology at the British Museum (Natural History) with a view to studying the culicines of the Ethiopian Region, more particularly the vectors of yellow fever; (ii) the Wellcome Bureau of Scientific Research for one and a half months to study routine and experimental work on yellow fever; (iii) a course of instruction in statistical methods in relation to vital statistics and epidemiology at the London School of Hygiene and Tropical Medicine; (iv) the Horton Malaria Laboratory for one month to increase his knowledge of the epidemiology of malaria, with special reference to the immunological factors involved.

Dr S. E. Theis attended the examination for the Fellowship of the Royal College of Surgeons, Edinburgh.

Dr A. V. Clemmey attended a course of instruction in ophthalmic medicine and surgery at the Royal London Ophthalmic Hospital, and took the first part of the D.O.M.S.

(c) *Honours.*—The following honour was graciously bestowed by His Majesty King George VI:—

New Year Honours List: M.B.E.: Mr C. Macquarie, Agricultural Surveyor.

2. *The Medical Services of the Territory*

The native population of the Territory as recorded in the Blue Book, 1937, numbered 5,140,368, spread over an area of 360,000 square miles, and having an average density of 14·28 per square mile. There are, however, many square miles which are uninhabited. Of the eight provinces, the Western has the lowest density—7·8 per square mile; and the Lake the highest—28·54 per square mile.

A sum of £203,695 was provided for ordinary recurrent expenditure, and a sum of £5,510 for special expenditure, on medical services. The actual amount spent, including special expenditure, amounted to £201,280. In addition to the work of this department a large amount of simple treatment is undertaken by native authorities through their own dressers, and much good work is done by the missions, on whose staffs there are some twenty-three registered medical practitioners who are almost wholly employed on native work.

The work of medical administration is delegated in two provinces to senior medical officers and in the Western province to the sleeping sickness officer. These officers are responsible to the Director for funds allocated for medical services in their provinces, for the discipline of the staff and for carrying out the department's policy.

The aim is to extend this system to other provinces but, partly because of the shortage of staff and partly because of the special nature of the duties of some of the senior officers, it is not yet possible to do so, though control of varying degrees is exercised over most out-stations from their provincial or district headquarters.

The number of medical officer posts had to be reduced during the year largely because of the invaliding of some members of the staff, and at the end of the year the department maintained a staff of medical officers (including senior and specialist officers) at sixteen different stations and of sub-assistant surgeons in charge of hospitals at twenty-two other stations. The number of government medical officers, including all specialist and senior officers, in the Territory at the end of the year, was thirty-eight and that of sub-assistant surgeons, including senior officers, was forty-five.

In addition to the government staff there are twenty-three missionary registered medical practitioners resident, and some forty-seven private practitioners (thirty-nine registered and eight licensed) in active practice who serve the needs of the Territory. There are also a number of registered practitioners not resident or not in active practice, for example, married medical women. The territorial distribution of these doctors, which is subject to change from time to time, is shown in table A; the numbers given in tables B and C do not agree in all cases with those in table A which includes some persons not actually practising.

Tables B and C show respectively the numbers of registered and licensed medical practitioners in active practice compared with the native and non-native populations. In table B missionary medical practitioners are included as their work is almost entirely native and in table C the private practitioners are included as being engaged chiefly among non-natives. Government medical officers and sub-assistant surgeons are available for all classes of the community and are therefore included in both tables. Table D indicates the number and distribution of native authority (tribal) and medical department dispensaries, together with the average population and area served by each dispensary.

Table A.—Distribution of Medical Staff in Government Service and otherwise, on 31st December 1937

M.O. =Government medical officer.
M.M.P.=Missionary medical practitioner.
P.P. =Medical practitioner not in government or missionary service.
S.A.S. =Sub-assistant surgeon.
Comp. =Asian compounder.
Disp. =African dispenser (only dispensers in charge of stations are shown).

District or Station	M.O.	M.M.P.	P.P.	S.A.S.	Comp.	Disp.
CENTRAL PROVINCE:						
Dodoma	1	...	...	1	1	...
Kondoa	...	...	...	1	...	...
Manyoni	...	2	...	...	1	...
Mkalama	...	2	...	...	...	1
Mpwapwa	*1	...	...	1	...	...
Singida	...	...	...	1	...	...
EASTERN PROVINCE:						
Bagamoyo	...	...	...	1	...	...
Dar es Salaam	†11	1	13	3	5	...
Kiberege	...	...	...	...	...	1
Kibiti	...	...	...	...	...	1
Kilosa	...	...	1	1	...	...
Kimamba	...	...	‡1	...	...	1
Kisaki	...	...	...	...	...	1
Mafia	...	...	...	1	...	...
Mahenge	...	...	...	1	...	...
Mohoro	...	...	...	...	...	1
Morogoro	2	...	1	2	1	...
Mpanganya	...	...	...	...	...	1
Ngerengere	...	...	1	...	...	...
Ruvu	...	...	...	...	...	1
Utete	...	...	...	1	...	...
LAKE PROVINCE:						
Biharamulo	...	...	...	1	...	...
Bukoba	1	2	2	1	1	...
Ikoma	...	...	...	...	1	...
Kwimba	...	...	...	...	...	1
Lukora	...	...	...	...	...	1
Mantare	...	1	...	...	...	...
Maswa	...	...	...	...	...	1
Missenyi	...	...	...	...	...	1
Musoma	1	1	1	1	1	...
Mwanza	3	...	3	2	1	...
Negezi	...	...	...	...	...	1
Ngara	...	...	...	...	...	1
Nyakahanga	...	...	...	...	...	1
Shinyanga	...	1	...	1	...	...
Tinde	§1	...	...	...	...	...
NORTHERN PROVINCE:						
Arusha	1	...	2	1	1	...
Babati	...	...	...	...	...	1
Kibongoto	1	...	...	...	1	...
Mbugwe	...	...	...	...	...	1
Mbulu	...	...	...	1	...	...
Moshi	2	2	1	2	1	...
Mwika	...	...	...	...	...	1
Usa	...	...	...	...	...	1
Carried forward ...	25	12	26	24	15	19

---

*One medical officer in charge Lymph Institute.

†Includes Headquarters Staff, Tutorial Officers, Senior Pathologist and Officer in charge Malaria Laboratory.

‡Licensed Practitioner.

§Sleeping Sickness Research Officer.

District or Station	M.O.	M.M.P.	P.P.	S.A.S.	Comp.	Disp.
Brought forward ...	25	12	26	24	15	19
Southern Province:						
Kilwa	...	...	...	1	...	...
Lindi	1	...	1	1	1	...
Liwale	1	...	...	...	1	...
Masasi	...	3	...	...	...	...
Mikindani	...	...	...	1	...	...
Ruponda	...	...	...	...	...	1
Songea	...	1	...	1	...	...
Tunduru	...	...	...	1	...	...
Southern Highlands Province:						
Chunya	2	...	1	...	...	...
Iringa	1	...	1	1	1	...
Kungutas	...	...	...	...	...	1
Lupa Market	...	...	1	...	...	1
Lupembe	...	1	...	...	...	...
Malangali	...	...	...	1	...	...
Mbeya	...	2	*1	...	...	...
Mufindi	...	...	1	...	...	...
Njombe	...	...	...	...	...	1
Sengambia	...	...	...	...	...	1
Tukuyu	1	1	...	...	...	...
Tanga Province:						
Amani	...	...	...	...	...	1
Handeni	...	...	...	...	...	1
Korogwe	...	1	...	1	...	...
Lushoto	...	...	2	1	...	...
Pangani	...	...	...	1	...	...
Same	...	...	...	...	...	1
Tanga	3	1	4	4	1	...
Usangi	...	...	...	...	1	...
Western Province:						
Kafura	...	...	...	...	...	1
Kahama	...	...	...	1	...	...
Kakonko	...	...	...	...	...	1
Kasulu	...	...	...	1	...	...
Kibondo	...	...	...	...	...	1
Kigoma	1	...	...	1	...	...
Makere	...	...	...	...	...	1
Nyaviyumbu	...	...	...	...	...	1
Nyonga	...	...	...	...	...	1
Nzega	...	...	...	1	...	...
Sumbawanga	...	...	...	1	...	...
Tabora	†3	1	1	2	1	...
Ushirombo	...	...	...	...	...	1
Uvinza	...	...	...	...	...	1
Uyogo	...	...	...	...	...	1
Total ...	38	23	‡39	45	21	36

*One private practitioner employed part time by government.

†Includes Sleeping Sickness Officer.

‡Does not include seven licensed employees of private concerns.

Table B.—Natives

(For abbreviations see table A)

Province	M.O.*	M.M.P.	S.A.S.	Population†	Population per M.O.	Population per M.O. M.M.P.	Population per M.O. M.M.P. S.A.S.
Central	2	4	4	545,260	272,630	90,877	54,526
Eastern	6	1	10	639,616	106,603	91,374	37,624
Lake	5	5	6	1,461,192	292,238	146,119	91,324
Northern ...	4	2	4	380,816	95,204	63,469	38,082
Southern ...	2	4	5	601,100	300,550	100,183	54,554
Southern Highlands ...	4	4	2	493,372	123,343	61,671	49,337
Tanga	3	2	7	352,986	117,662	70,597	29,415
Western ...	3	1	7	666,026	222,009	166,506	60,548
Territory ...	29	23	45	5,140,368	177,254	98,853	52,993

*Executive Medical and Health Officers only. †Blue Book 1937.

Table C.—Non-Natives

(For abbreviations see table A)

Province	M.O.*	P.P.	S.A.S.	Population†	Population per M.O.	Population per M.O. P.P.	Population per M.O. P.P. S.A.S.
Central	2	...	4	2,543	1,271	1,271	424
Eastern	6	17	10	14,565	2,427	633	441
Lake	5	6	6	5,397	1,079	491	317
Northern ...	4	3	4	4,378	1,094	625	398
Southern ...	2	1	5	2,032	1,016	677	254
Southern Highlands ...	4	5	2	2,676	669	297	243
Tanga	3	6	7	6,819	2,273	758	426
Western ...	3	1	7	3,737	1,246	934	340
Territory ...	29	39	45	42,147	1,453	620	373

*Executive Medical and Health Officers only. †Blue Book 1937.

Table D.—Native Dispensaries

DISTRICT	Area sq. miles	Native population 1931 Census	Tribal Dispensaries	Medical Department Dispensaries	Square miles to each dispensary	Population to each Dispensary
CENTRAL PROVINCE:						
Dodoma	23,671	208,294*	14	...	1,691	14,878
Kondoa	5,750	118,151	3	...	1,917	39,384
Singida	8,076	250,239	9	1†	807	25,024
Total ...			26	1		
EASTERN PROVINCE:						
Bagamoyo	3,910	62,057	7	...	559	8,865
Dar es Salaam	4,080	130,127	5	3	510	16,266
Kilosa	6,000	68,686	7	1	750	8,586
Morogoro	7,620	149,484*	10	1	693	13,589
Rufiji	5,103	87,364	7	2	567	9,707
Ulanga	15,570	93,152	15	1	973	5,822
Total ...			51	8		
LAKE PROVINCE:						
Biharamulo	6,556	100,208	5	1 (1)	937	14,315
Bukoba	7,010	275,922*	19	2	334	13,139
Kwimba	1,830	200,062	8	1	203	22,229
Maswa	10,870	230,126	9	1	1,087	23,013
Musoma	7,250	184,028	12	1†	558	14,156
Mwanza	5,580	250,170*	27	...	207	9,266
Shinyanga	3,500	144,536	6	1	500	20,648
Total ...			86	8		
NORTHERN PROVINCE:						
Arusha	6,250	47,414*	1	2	2,083	15,805
Masai	18,470	32,168	7	...	2,639	4,595
Mbulu	5,160	98,816	8	1	573	10,980
Moshi	2,120	161,558*	5	(1)	353	26,926
Total ...			21	4		
SOUTHERN PROVINCE:						
Lindi	8,148	124,556*	...	1	8,148	124,556
Newala	1,900	75,512	1	...	1,900	75,512
Songea	16,398	115,786	12	...	1,366	9,649
Tunduru	4,830	46,479	3	...	1,610	15,493
Total ...			16	1		
SOUTHERN HIGHLANDS:						
Iringa	11,911	86,795	8	...	1,489	10,849
Mbeya	16,540	84,591	14	3	973	4,976
Njombe	8,330	125,463	11	1†	694	10,455
Rungwe	1,750	195,062	7	...	250	27,866
Total ...			40	4		

*Excluding the Township population. Subsidiary dispensaries not included in Table A are shown in brackets.

†Three Medical Department dispensaries are normally staffed by Compounders.

DISTRICT	Area sq. miles	Native population 1931 Census	Tribal Dispensaries	Medical Department Dispensaries	Square miles to each dispensary	Population to each Dispensary
Tanga Province:						
Korogwe	9,554	175,707	11	2	735	13,516
Pare	3,870	57,911	5	1	645	9,652
Tanga	2,678	114,796*	3	...	893	38,265
Total ...			19	3		
Western Province:						
Nzega	14,400	192,316	14	2	1,029	13,737
Kigoma	21,010	205,926	1	5	3,502	34,321
Tabora	38,600	203,491*	6	1 (1)	4,825	25,436
Ufipa	25,390	78,501	5	...	5,078	15,700
Total ...			26	9		
Territory ...	366,632		285	38	1.136	‡

*Excluding the Township population. Subsidiary dispensaries not included in Table A are shown in brackets.

‡Administrative Districts omitted from the above table contain no dispensaries. In the districts above the average population per dispensary is appoximately fourteen thousand two hundred and fifty.

It will be observed that the latest figures of population as printed in the 1937 Blue Book show the population of the Lake province as 1,461,192 persons. With five government and five missionary practitioners, this province now contains 292,238 persons per government medical officer and half that number per doctor working for natives.

During 1937 a number of dispensaries in the Southern province were closed temporarily, since it was considered that it was advisable to substitute more highly trained personnel for the existing staff. The nucleus of this personnel has been selected and training is to start early in 1938.

As stated in 1936, it is not possible or desirable to distribute medical staff strictly in accordance with the density of population. In 1937, of twenty-two administrative districts each having a population of over 100,000, a total of eleven had no government medical officer, whilst fourteen of the districts each with less than 100,000 persons were similarly situated. The largest district population without a government medical officer was Singida, with a population of 250,239. There was no change in the numbers of laboratory and research personnel.

Hospital Provision.

Native.—Hospital beds, total 2,140 ; average number of the population per bed, 2,347 ; mean provincial population per bed, 2,430 ; best provided province (Eastern) per bed, 1,297 ; worst provided province (Lake) per bed, 4,214. These figures refer to the numbers of beds allocated to wards under *optimum* conditions of space. The accommodation which can be and is frequently made available exceeds that shown above by an average of 20 per cent.

European.—European hospitals exist at ten stations in seven provinces and the provincial European population per government European hospital varies between 429 at Lindi and 1,981 in the Eastern province. In ten districts with over a hundred Europeans and in two with over two hundred there is no European hospital.

Calculations based on the 1937 returns show that the percentage of Europeans out of all patients treated at government hospitals amounted to: in-patients 4·03 per cent and out-patients 0·55 per cent. In addition to government hospitals there were 38 government dispensaries and 285 tribal dispensaries in operation at the end of 1937.

3. *Assistance to Missions for Medical Work*

Grants were made and drugs and equipment were supplied during the year to missionary societies to the value of £1,305 for the care and treatment of leprosy patients and £993 for maternity and child welfare work. In addition drugs and equipment to the value of £308 were supplied for the treatment of common parasitic diseases.

Certain mission bodies who have qualified medical practitioners on their staff have formed a medical missionary committee the aims of which are the co-ordination of the missions' own medical work and co-operation with Government. The first meeting of this committee took place in September and some of the sessions were attended by the Acting Director and other members of the department.

The first meeting revealed that the committee can be of great value as a medium for bringing to light local difficulties, for exchanging ideas and for preventing unnecessary overlapping. One of the results of the meeting was an arrangement whereby the medical specialist prepares and issues "clinical notes" for the use of missionary practitioners. These notes deal with recent medical literature and in particular with new work on the diagnosis and treatment of tropical diseases.

Advice and assistance continues to be given to some missions who are training African medical staff, and external examiners are provided where required. Six students from two missions completed their training as dispensers during the year.

4. *The training of African staff*

The report for 1935 contained a review of the technical training of medical assistants, dispensers and tribal dressers. Two new students entered Makerere College and one entered Mulago Medical School during 1937. No new students entered the dispensers' school at Dar es Salaam but one completed a three years' course at the end of 1937 and seven more are expected to pass out in 1938. Higher grade tribal dressers (medical auxiliaries) are being trained at Mwanza, Bukoba, Musoma, Tabora and Tukuyu. These centres accommodate nineteen, ten, thirty-four, ten and seventeen respectively.

In addition there are four girls in training at Tabora as dressers and midwives. Arrangements have been made for the opening of a tribal dresser school at Tanga in 1938. Six candidates for appointment as urban sanitary inspectors were trained there during the year and three were successful in passing the qualifying examination.

The curricula for African dispensers and tribal dressers (medical auxiliaries) are given in the addenda on pages 50-52.

It has for long been recognized that considerable advance in the training of African women for maternity and child welfare work cannot be made until numbers of literate candidates become available. Tradition, which indicates matrimony as the normal goal of an African girl, militates against her entry into a career wherein matrimony would be a complete hindrance or at least a paramount distraction. In these circumstances, missions, which influence the whole lives of their adherents, are in a better position than is Government to undertake this training, though results, which do in fact include the provision of a certain number of midwives, are stated to be disappointing on the whole compared with the efforts which are expended. The numbers of African girls attending the government schools are rising and at 416 in 1936 were nearly three times the numbers in 1931. The Medical Department is training a few midwives at its maternity and child welfare clinics and from experience gained, will be in a position to take advantage of increased literacy in due course.

It appears that extended midwifery work in the future must rely largely upon the services of women more elderly than unmarried girls, and in order that these more elderly candidates may have the qualification of literacy, it is necessary that they shall have been schooled in their youth. At Tabora school, and at one mission, girls are now being instructed in elementary hygiene and the care of infants, and in later life it may be possible for the services of some of them to be utilized.

5. *Medical Registration Board*

The tables below show the number of medical practitioners and dentists registered in the Territory, and the nature of their qualifications, together with the alterations effected during the year :—

TABLES SHOWING NUMBER OF PERSONS REGISTERED AS MEDICAL PRACTITIONERS AND DENTISTS ON 31st DECEMBER 1937

Medical Practitioners

	British or Colonial Qualifications			Qualifications not registrable in British Register	Total
	Government Service	Private or Missionary	Not resident	Private or Missionary	
British ...	48*	19	11*	—	78
British Indian	3	4	5	—	12
Goan	—	6	3	—	9
German ...	—	2	1	29†	32
Swiss	—	—	—	1	1
United States	—	—	—	3	3
Greek	—	—	—	2	2
Total ...	51*	31	20*	35	137

*Two medical officers hold dental qualifications in addition and appear in both lists.

†Three non-resident.

Dentists

	British Qualifications			Foreign Qualifications	Total
	Government Service	Private or Missionary	Not resident	Private or Missionary	
British ...	3*	2	3*	1	9
German ...	—	—	—	5†	5
Japanese ...	—	—	—	1‡	1
Dutch	—	—	—	1	1
Total ...	3*	2	3*	8	16

*Two medical officers hold dental qualifications in addition and appear in both lists.

†One non-resident. ‡Registered in Foreign List of British Dentists' Register.

Table showing the number of persons whose Names were added to, or removed from, the Register during 1937

	Added		Total	Removed		Total
	Medical	Dental		Medical	Dental	
British	3	2	5	6	—	6
German	7	2	9	—	—	—
Greek	1	—	1	—	—	—
Dutch	—	1	1	—	—	—
Total...	11	5	16	6	—	6

In addition to the registered medical practitioners shown in the table above 59 persons are licensed to practise medicine in the Territory under specified conditions; the licences require renewal each year. Of these 51 are in government service, seven are privately employed by commercial undertakings or charities, and one is in private practice.

6. *Aerial Transport*

Use was made of air transport on twenty-seven occasions during the year. On one of these, information had been received from Mahenge by telegram that a surgical operation was urgently necessary, that certain special instruments were not there available, and that a landing was impossible owing to the bad condition of the aerodrome. The equipment required was successfully dropped from an aeroplane at that station within two hours of the receipt of the original telegram at a direct distance of some 220 miles from Dar es Salaam. On twenty-two occasions air transport was used for routine journeys, whilst on the remaining four it enabled attention to be given to cases of emergency illness.

7. *Publications*

The following medical pamphlets were published by Government and distributed to officials, missions and others to whom they might prove to be of value:—

(a) "Inexpensive Burnt-Brick Houses for Natives" (Medical Pamphlet No. 23). A twelve-page pamphlet (illustrated) by A. T. Culwick, M.B.E.

(b) "Plague in Tanganyika Territory" (Medical Pamphlet No. 4 Revised Edition). A seven-page pamphlet.

(c) "Furaha Nyumbani" (Medical Pamphlet No. 2 Revised Edition). A two-page pamphlet in Kiswahili.

(B).—LEGISLATION

The following legislation affecting public health was promulgated during the year :—

The Pharmacy and Poisons Ordinance, 1937 (No. 1 of 1937).—An Ordinance to replace the previous Drugs and Poisons Ordinance (Cap. 89) which was no longer considered as giving adequate protection to the public.

The Lunacy Ordinance, 1937 (No. 13 of 1937).—An Ordinance to replace the Indian law previously applied to the Territory.

The following subsidiary legislation affecting public health was gazetted during the year :—

UNDER THE TOWNSHIP ORDINANCE :

(a) *The Township (Amendment) Rules, 1937* (Government Notice No. 55 of 1937). These rules control the preparation of hides in Dar es Salaam Township.

(b) *The Township (Amendment) (No. 2) Rules, 1937* (Government Notice No. 85 of 1937). This rule amplifies sub-rule (3) of rule 11 of the Township Rules.

(c) *The Township (Amendment) (No. 3) Rules, 1937* (Government Notice No. 214 of 1937). These rules improve and amplify control over the milk trade in townships.

UNDER THE MINOR SETTLEMENTS ORDINANCE :

The Minor Settlements (Sanitary Rate) Order, 1937 (Government Notice No. 237 of 1937). This order fixes the sanitary rate from the 1st January 1938 in certain minor settlements.

UNDER THE TOWN DEVELOPMENT (CONTROL) ORDINANCE :

(a) *The Town Development (Control) (Application) Order, 1937* (Government Notice No. 242 of 1937). This order applies parts 1, 2 and 3 of the Ordinance to eighteen townships.

(b) *The Town Development (Control) (Application) (No. 2) Order, 1937* (Government Notice No. 240 of 1937). This order applies parts 1, 2 and 3 of the Ordinance to three minor settlements.

UNDER THE MASTER AND NATIVE SERVANTS ORDINANCE :

(a) *The Restriction on Recruitment (Biharamulo) Regulations, 1937* (Government Notice No. 17 of 1937). This regulation confined the employment of recruited Biharamulo natives to employment in that district.

(b) *The Restriction on Recruitment (Western Province) Regulations, 1937* (Government Notice No. 31 of 1937). These are local regulations for recruitment and quarantine of recruits which replace previous regulations.

(c) *The Restriction on Recruitment (Lake Province) Regulations, 1937* (Government Notice No. 89 of 1937). These regulations are very similar to those described as (b) *supra*.

(d) *The Restriction on Recruitment (Western Province) (No. 2) Regulations, 1937* (Government Notice No. 90 of 1937). These are special regulations for Uha and two neighbouring areas.

UNDER THE CUSTOMS ORDINANCE :

(a) *The Restricted Imports (Denatured Spirit) Order, 1937* (Government Notice No. 19 of 1937). This is an order regulating the importation of non-potable spirit.

(b) *The Restricted Imports (Denatured Spirit) (Amendment) Order, 1937* (Government Notice No. 229 of 1937). This order covers the case of non-potable spirit imported from Uganda.

UNDER THE INTOXICATING LIQUORS ORDINANCE :

The Intoxicating Liquors (Denatured or Methylated Spirits) Regulations, 1937 (Government Notice No. 93 of 1937). These are regulations to control the selling of non-potable spirit within the Territory.

UNDER THE EXTERMINATION OF MOSQUITOES ORDINANCE :

(a) *The Mosquito Rules, 1937* (Government Notice No. 112 of 1937). These rules define measures for the prevention of mosquito-breeding which Sanitary Authorities may order to be undertaken.

(b) *The Mosquito (Amendment) Rules, 1937* (Government Notice No. 143 of 1937). This is a short amendment to (a) *supra.*

(c) *The Extermination of Mosquitoes (Application) Order, 1937* (Government Notice No. 243 of 1937). This order applies the Ordinance in a particular area.

UNDER THE INFECTIOUS DISEASE ORDINANCE :

(a) *The Infectious Disease (Declaration of Infected Area) Order, 1937* (Government Notice No. 29 of 1937). The Iramba Chiefdom of the Singida district was declared infected with plague from the 19th February 1937.

(b) *Revocation Orders* to the above (Government Notices Nos. 62 and 70 of 1937) were issued on the 16th and 29th April 1937.

(c) *The Infectious Disease (Declaration of Infected Area) (No. 2) Order, 1937* (Government Notice No. 33 of 1937). Parts of the Mwanza and Maswa districts were declared infected with plague from the 3rd March 1937.

(d) *The Infectious Disease (Declaration of Infected Area) (No. 3) Order, 1937* (Government Notice No. 34 of 1937). Mwanza Township was declared infected with plague from the 4th March 1937.

(e) *Revocation Orders* to (c) and (d) *supra* (Government Notice No. 122 of 1937) were issued on the 12th July 1937.

(f) *The Infectious Disease (Declaration of Infected Area) (No. 4) Order, 1937* (Government Notice No. 38 of 1937). The districts of Lindi and Masasi were declared infected with smallpox from the 3rd March 1937.

(g) *The Infectious Disease (Declaration of Infected Area) (Southern Province) Order, 1937* (Government Notice No. 184 of 1937). The Southern Province, which includes the area in (f) *supra*, was declared infected with smallpox from the 7th October 1937.

(h) *The Infectious Disease (Declaration of Infected Area) (Kilosa District) Order, 1937* (Government Notice No. 207 of 1937). The Kilosa district was declared infected with cerebro-spinal meningitis from the 13th November 1937.

UNDER THE AIR NAVIGATION (COLONIES, PROTECTORATES AND MANDATED TERRITORIES) ORDER, 1937 :

The Air Navigation (Customs Aerodromes) (Amendment) Directions, 1937 (Government Notice No. 157 of 1937). This direction adds Bukoba and Kigoma to and deletes Tabora from the list of customs aerodromes.

(C).—FINANCIAL

Expenditure and Revenue

Estimates of expenditure on ordinary recurrent medical services for the year provided the sum of £203,695 ; estimates of expenditure on non-recurrent special items totalled £5,510 ; the total estimate was thus £209,205, which includes sundry small amounts supplementary to the original approved estimates. Actual expenditure against the above figure totalled £201,280, an increase of £15,545 over such expenditure in 1936, and representing a saving of £7,925 on the sum provided.

In addition to the above, medical expenditure from the Colonial Development Fund to the extent of £11,416 was sanctioned, though actual expenditure was only £6,564, owing to the fact that large anti-malarial works in Dar es Salaam which it had been hoped to complete during the year, were still unfinished at the end of December.

In the approved estimates, the sum provided for ordinary recurrent and special medical expenditure (£208,115) was equal to 11·2 per cent of the territorial estimate for recurrent and special items.

On the revenue side, medical receipts show an increase of £867 over the sum estimated, and of £1,247 over the amount collected during 1936.

Medical Stores and Equipment

The increased provision in the estimates, referred to in the report for 1936, for the purchase of medical stores and equipment, resulted in a carry-forward to 1938 of stocks in the central store valued at £10,461. This constituted a position very much more satisfactory than at the end of 1936 though still allowing an insufficient margin of safety, as it is considered that the reserve stock should eventually reach a value of £18,000, equal to a year's requirements.

The medical store is now well housed, with a separate new building divided into two portions, one for the storage of spirit and one for reserve stores.

Financial Summary

(For details see table at page 56)

Revenue :	Estimated £	Actual £
Receipts, Medical*	8,500	9,367
Reimbursements by Railways	3,280	3,280
Total	£11,780	£12,647

Expenditure :	Approved Estimate† £	Revised Estimate £	Actual £
Ordinary recurrent	203,695	—	197,514
Non-recurrent	5,510	—	3,766
Total	£209,205	£201,170	£201,280

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*Does not include £1,113 for bills of health collected by Customs and Marine departments shown in table of financial details.

†Includes supplementary estimates.

	Estimated £		Actual £
Colonial Development Fund :			
Tuberculosis Investigation	878	...	721
Sleeping Sickness Research ...	2,700	...	2,640
Anti-Malaria Works, Dar es Salaam	7,838	...	3,203
Total ...	£11,416	...	£6,564

Revenue for the last five years is as follows :—

	£
1933	10,552
1934	12,614
1935	10,271
1936	11,400
1937	12,647

II.—THE STATE OF THE PUBLIC HEALTH

1. Attendance at Hospitals

In the table below are given the figures showing the secular changes in the number of patients treated and deaths recorded at the Government general hospitals during the last fourteen years. They do not include patients treated at maternity clinics, infectious diseases hospitals, sleeping sickness treatment centres or dispensaries in charge of Africans :—

Year	Number of hospitals	Total patients treated in hospitals	Deaths in Hospitals	Blue Book population returns	Percentage of general population treated	Out index (Total patients ÷ hospital-days)
1924	38	169,045	679	4,123,493	4·1	14·258
1925	39	272,373	783	4,123,493	6·6	22·384
1926	48	334,255	929	4,338,321	7·7	22·319
1927	53	396,570	992	4,913,069	8·1	23·982
1928	58	405,558	1,233	4,770,539	8·5	22·411
1929	56	395,904	1,615	4.825,064	8·2	22·659
1930	55	428,593	1,525	4,884,601	8·8	24·976
1931	56	456,557	1,273	5,063,544	9·2	26·131
1932	54	510,268	1,178	4,972,807	10·3	30·286
1933	55	546,361	1,248	5,038,590	10·8	31·839
1934	54	582,248	1,506	4,988,338	11·7	34·559
1935	54	597,327	1,537	5,096,178	11·7	35·454
1936	54	636,193	1,504	5,105,805	12·5	37·761
1937	54	664,668	2,152	5,182,515	12·8	39·416

The output index is calculated by taking the total number of patients treated during each year and dividing this figure by the product of 312 working days and the number of hospitals for each year. The highest output of work is given by the Sewa Hadji Hospital, Dar es Salaam, where daily averages of over 116 new out-patients and 12·3 new in-patients were treated during the year.

The increase in the number of deaths in hospitals in 1937 is largely accounted for by deaths from lobar pneumonia, and from enteritis complicating nutritional diseases.

2. Attendance at Tribal Dispensaries

The cases treated during the year numbered 573,987, an increase of 44,033 over the figure for 1936. Figures for the last five years are as follows :—

1933	402,011
1934	451,520
1935	461,097
1936	529,954
1937	573,987

Fifteen new tribal dispensaries were opened during 1937 in the Central, Northern, Eastern, Lake and Western provinces. Twenty-seven dispensaries were closed during the year in the Southern, Southern Highlands and Tanga provinces. A total of 285 were in operation at the end of 1937. These dispensaries are maintained by the native authorities and provision has been made for the opening of thirteen more in the various provinces during 1938.

3. Maternity and Child Welfare

Maternity and child welfare work was carried on during the year at twelve special clinics by Government and missionary societies, some of the latter receiving assistance for this work either from Government or from the native administrations. The figures for all clinics are as follows :—

	1933	1934	1935	1936	1937
Total number of confinements admitted to clinics... ...	2,673	3,809	3,396	3,614	3,800
Total number of confinements attended to elsewhere ...	66	33	8	2	—
Total number of new cases (in- and out-patients) seen at clinics:					
Mothers	25,485	28,554	27,365	30,689	28,813
Children	42,932	41,163	40,820	38,648	49,138
Total number of attendances at clinics:					
Mothers	292,916	269,254	204,008	177,432	201,136
Children	485,798	395,648	306,537	294,174	296,815

The Government and child welfare services in the Western province suffered temporary restriction owing to staff casualties : generally however the new cases and attendances of the Territory show a small increase over those of 1936, and it can be said that the decrease in total number of attendances is of small significance in view of the stability of the numbers of new cases, being probably due to the fact that a gradual spread of knowledge makes fewer attendances by each patient necessary.

4. Mental Hospitals

Dodoma mental hospital which is administered by a senior medical officer assisted by a trained European mental hospital superintendent and his wife (also trained), has accommodation for seventy-four non-European males and forty-six females. Four new single-bedded wards were added to the male side and six to the female side during 1937 but more accommodation is still required to reduce congestion. Extensions and improvements to be carried out during 1938 include the addition of three rooms to the Asian male block, and the fitting of bathrooms and septic tanks.

No improvements or alterations to Lutindi mental hospital have been made during the year and the conditions remain as stated in the last annual report.

Statement of Patients in Mental Institutions

Numbers :—

	Dodoma			Lutindi			Prison lunatic asylums					
	M.	F.	Total	M.	F.	Total	Males		Females		Total	
							Civil	Criminal	Civil	Criminal	Civil	Criminal
In-patients, 1st Jan. 1937	67	35	102	60	36	96	9	19	1	2	10	21
Admitted during the year	49	12	61	14	6	20	130	14	17	—	147	14
Discharged during the year	16	5	21	4	1	5	91	4	10	—	101	4
Escaped	1	—	1	—	—	—	—	—	—	—	—	—
Transferred to mental hospital	—	—	—	—	—	—	34	9	7	2	41	11
Died during the year ...	29	6	35	7	—	7	3	4	—	—	3	4
In-patients, 31st December 1937	70	36	106	63	41	104	11	16	1	—	12	16

Classification of Admissions

	Dodoma	Lutindi
Mania	15	5
Melancholia	7	4
Delusional insanity ...	13	2
Confusional insanity ...	7	—
Dementia	6	2
Epilepsy	7	3
Mental defectives	1	2
Paralysis	—	2
Encephalitis	2	—
For observation	3	—

The following inspections of the mental hospitals were made :—

	Dodoma	Lutindi
The Director of Medical Services	—	2
The Deputy Director of Medical Services ...	2	—
The Provincial Commissioner, Tanga Province	—	1
The Director, Public Works Department ...	1	—
The Auditor	1	—
The Board of Visitors	12	—
The Senior Medical Officer, Dodoma	38	—
The Senior Medical Officer, Tanga*	—	3
The District Officer, Korogwe*	—	3
The Medical Officer, Bumbuli Mission ...	—	10

The Indian law dealing with the control of mentally afflicted persons and their property which had been applied to the Territory, and had been found deficient in certain respects, was replaced during 1937 by more up-to-date legislation in which the practical needs of the Territory were met.

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*Asylum visitor.

CAUSES OF DEATHS OF PATIENTS DYING IN MENTAL HOSPITALS

Mental Hospital, Dodoma

Sex of deceased	Bodily condition on admission	Form of Mental Disorder	Date of Admission	Cause of Death
Male	Good	Dementia	19.11.28	Helminthiasis
,,	,,	Mania	23.5.30	Status Epilepticus
Female	Fair	Dementia	4.9.30	Acute Diarrhoea
,,	Good	,,	4.11.33	Tuberculosis
Male	,,	,,	12.4.34	Ankylostomiasis
,,	Fair	,,	13.2.35	,,
,,	Poor	Epilepsy	11.5.35	Epilepsy
,,	Fair	Dementia	14.8.35	Diarrhoea
,,	,,	Epilepsy	17.10.35	Epilepsy
,,	,,	Melancholia	13.11.35	Diarrhoea
,,	Good	Epilepsy	28.12.35	Epilepsy
,,	,,	,,	15.1.36	,,
Female	Fair	Delusional Insanity	5.2.36	Exhaustion
Male	,,	Melancholia	14.3.36	Inanition
,,	Poor	Dementia	1.5.36	Tuberculosis
,,	Good	Mania	13.5.36	Inanition
,,	Fair	Delusional Insanity	20.6.36	Amoebic Dysentery
,,	,,	Confusional Insanity	17.6.36	,, ,,
Female	Poor	Dementia	1.7.36	Inanition
Male	Good	Epilepsy	11.7.36	Diarrhoea
,,	Fair	Mental Deficiency	9.9.36	,,
,,	Good	Confusional Insanity	9.9.36	Ankylostomiasis
Female	Fair	Dementia	7.11.36	Exhaustion
,,	,,	Epilepsy	20.11.36	Amoebic Dysentery
Male	Poor	Mania	4.11.36	Diarrhoea
,,	Fair	Dementia	23.1.37	,,
,,	,,	Mania	27.2.37	Cerebral Haemorrhage
,,	,,	Melancholia	17.4.37	Exhaustion
,,	,,	Acute Mania	28.5.37	Lobar Pneumonia
,,	,,	Delusional Insanity	29.5.37	Hemiplegia
,,	,,	Melancholia	23.6.37	Exhaustion
,,	Poor	Encephalitis	21.7.37	Encephalitis
,,	,,	Acute Mania	11.8.37	Diarrhoea
,,	Fair	Mania	27.8.37	Exhaustion
,,	Poor	Dementia	9.10.37	Ankylostomiasis

Mental Hospital, Lutindi

Sex of deceased	Bodily condition on admission	Form of Mental Disorder	Date of Admission	Cause of Death
Male	Fair	Delusional Insanity	14.1.13	Senile Decay
,,	Weak	Mania	13.11.30	Tuberculosis
,,	,,	Delusional Insanity	24.12.31	,,
,,	,,	Mental Deficiency	20.8.35	,,
,,	Poor	Dementia	6.2.36	Chronic Debility
,,	,,	Paralysis	1.11.36	Paralysis.
,,	,,	,,	17.3.37	,,

5. DENTAL TREATMENT

The Senior Dental Surgeon went on leave in January and returned in August. Below is given a brief summary of the treatment carried out by him on officials and their families during the four months that he was in the country :—

	European	Asian
Attendances	702	308
Fillings	357	45
Extractions	114	238
Pulp treatment	21	2
Gum treatment	116	39

Dentures	46
Denture repairs	33
Radiograms	154

In addition 215 Africans attended for treatment; some conservative work was done, but extraction of aching teeth was more usually required.

Mr P. H. Tatchell, Dental Surgeon, joined the department in January and was posted to Dar es Salaam until the Senior Dental Surgeon's return from leave. During this period, Mr Tatchell carried out the following treatments on officials and their families :—

	Europeans	Asians	Africans
Attendances	605	385	360
Fillings	210	41	20
Extractions	165	251	234
Pulp treatment	4	—	—
Gum treatment	131	54	35
Radiograms	38	—	—

Dentures	15
Denture repairs	28

On the Senior Dental Surgeon's return, Mr Tatchell was transferred to Tanga, a station that had been without a dental surgeon for nearly three years. After his transfer, Mr Tatchell spent over a month and a half on tour, between the 17th September and the 4th November, and visited seven stations in the Northern, Central and Lake provinces. During his tour he carried out the following treatments on officials and non-officials :—

	Europeans	Asians	Africans
Attendances	488	102	314
Fillings	282	11	10
Extractions	170	130	114
Scalings	148	36	64
Cysts	1	—	1

The work carried out by him on officials at Tanga and on tour is shown in the table below :—

	Europeans	Asians	Africans
Attendances	306	76	167
Fillings	159	13	5
Extractions	93	73	51
Gum treatment	78	21	22
Films	16	—	—
Repairs to dentures	5	—	—
Dentures	6	3	3
Cysts, etc.	—	—	1

A small dental clinic was started by the Senior Dental Surgeon at the Sewa Hadji Hospital, Dar es Salaam, at the end of the year. The object of this clinic is to provide dental facilities for Africans and to serve as a centre for teaching minor dental surgery to African dispensers.

The staff of the Senior Dental Surgeon consists of the dental mechanic (who was on leave for nearly eight months in 1937), two African orderlies and a messenger. The staff of the Dental Surgeon, Tanga, consists of one orderly.

6. General Diseases

Of diseases other than the communicable group those of the skin, cellular tissue, bones and organs of locomotion provided the largest number of cases (103,569), accounting for 17·60 per cent of the total. Those of the digestive system amounted to 14·67 per cent, and of the respiratory system, not including tuberculosis of the lungs, to 12·22 per cent. Deaths from diseases of the digestive system amounted to 12·22 per cent of the total deaths and of the respiratory system to 19·09 per cent.

The incidence of the various diseases approximates closely to that in 1936. The figures are not, however, strictly comparable with those of previous years since the Granville Edge classification is adopted in this report for the first time. For details see tables at pages 59-65.

7. Infectious Diseases

Infectious and parasitic diseases accounted for 38·05 per cent of the total cases treated and 39·22 per cent of the total deaths among patients treated in government hospitals and dispensaries as against 36·03 and 33·24 per cent in 1936. The following table shows the incidence of dangerous infectious diseases since 1933 :—

Year	Smallpox		Cerebro-spinal Meningitis		Plague		Influenza		Diphtheria	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1933...	626	38	—	—	9	5	—	—	—	—
1934...	411	37	55	13	—	—	2,600	491	—	—
1935...	503	4	153	66	1	1	2,819	82	—	—
1936...	1,649	50	179	114	16	9	—	—	6	2
1937...	1,462	17	269	125	135	66	—	—	2*	1

*Treated at Infectious Diseases Hospital. (No cases of rabies were reported in 1937.)

(1) BLOOD INOCULATION GROUP

Malaria.—Fifty-seven thousand eight hundred and sixty-four cases of which 31,272 were subtertian, were treated during the year. The figures include cases in which the diagnosis was not microscopically confirmed. The greatest number treated in one hospital (5,763) was at Moshi and the highest relative numbers were at Arusha and Kibongoto. One hundred and two deaths were recorded as against sixty-three in 1936.

The major anti-malarial works undertaken at Dar es Salaam during the previous year and financed by the Colonial Development Fund Loan (£27,500) were continued, and at the end of 1937 the filling and draining operations in the Gerezani area were complete. The projected scheme for the golf course and Kurasini areas of Dar es Salaam was begun and the manufacture of inverts and pipes was continued. In the Kivukoni area, east of Dar es Salaam harbour, a further sum of £100 was expended on the extension of the original provisional scheme. During the year the Anti-Malarial Engineer visited various stations and at Iringa prepared a scheme for dealing with anopheline breeding places.

Blackwater Fever.—Fifty-one cases with eighteen deaths were reported as against forty-six with eight deaths in 1936. Eight cases with four deaths occurred at Tanga, five cases with three deaths at Tabora and six cases with one death at Moshi.

African Relapsing Fever.—One thousand six hundred and twelve cases with seventeen deaths were reported. The highest number treated at a single hospital was three hundred and fifty-five and the highest relative numbers were at Biharamulo and Mwanza. (Lake Prov)

Plague.—Two serious outbreaks of plague occurred in the Territory during the year. The first was in a rural area of Singida district in the Central province and was brought under control within a few weeks of the outset (in February) after sixty-one cases had occurred with seventeen deaths. The second epidemic was more serious, for the town and port of Mwanza in the Lake province were infected. Seventy-two cases with forty-seven deaths occurred in the province and serious dislocation of trade accompanied the outbreak. Climatic conditions favoured the spread of the disease and cases occurred from February until the beginning of August. The staff of the local health department was increased, and strong efforts have been made throughout the year to effect improvement in local housing and trading premises so that possible reinfection of Mwanza in the future from the endemic foci in the lake littoral may be avoided. Two sporadic cases of plague, both fatal, occurred in the Iringa district of the Southern Highlands.

SLEEPING SICKNESS

With the exception of a few sporadic cases there has been no extension of the area affected by this disease during the year. In the Liwale district, where an outbreak occurred as described in last year's report, cases were found in two villages which were formerly free from the disease. These villages were, however, within the area that was already affected. The following table gives the number of cases diagnosed and deaths reported in the different provinces during the last five years :—

Province	New cases					Deaths				
	1933	1934	1935	1936	1937	1933	1934	1935	1936	1937
Central ...	54	12	17	8	6	6	9	6	1	9
Eastern ...	—	1	—	2	—	—	—	—	—	—
Lake ...	623	381	321	139	51	122	102	92	97	49
Southern ...	6	3	4	103	75	3	4	—	61	26
Western ...	1,621	1,078	733	284	168	347	282	244	225	244

In the Central province the systematic clearing of bush was continued and 17½ square miles were cleared during the year.

A survey of the population and the conditions under which they live is being carried out in the northern section of Liwale district in the Southern province. This survey includes an examination of the major types of bush that exist, the types of country selected by the natives for agriculture, the main crops, water supplies, and native customs and industries which may have a bearing on the epidemiology of sleeping sickness.

In the Western province about 1,500 families were moved into new concentrations, while some 150 more entered old settlements. The vast majority of the people in the province living north of the Central Railway are now living either in open country, or in concentrations where medical treatment is available.

(2) INTESTINAL AND EXCREMENTAL GROUP

The Enteric Group.—One hundred and five cases of enteric fever and twelve cases of paratyphoid fever with twenty and one deaths respectively were treated at government hospitals. The greatest number of enteric cases occurred at Morogoro (thirty-three cases with six deaths), Tanga (eleven cases with four deaths) and Mwanza (eight cases with five deaths). Four cases (non-fatal) of paratyphoid were treated at Mwanza.

[illegible] Lake

Dysentery.—One thousand nine hundred and eighteen cases, of which 783 were amoebic, 185 bacillary and 950 unspecified, were treated during the year and 51 deaths were recorded. The comparative figures for 1936 are 1,709 cases, 627 amoebic, 72 bacillary and 1,010 unspecified. The greatest number of cases was reported from Kibongoto where 314 cases (311 amoebic and 3 unspecified) were treated.

HELMINTHIC DISEASES

Ankylostomiasis.—Of a total of 14,789 cases the greatest number treated at a single hospital was 2,061 at Kigoma. The highest relative numbers were at Tanga and Korogwe where 1,498 and 1,291 cases respectively were treated.

Taeniasis.—Of 19,069 cases treated, the greatest number at a single hospital was 5,019 at Moshi and the highest relative numbers were at Kibongoto and Arusha.

Ascariasis.—Of 18,180 cases treated, the greatest number at a single hospital was 5,574 at Moshi and the highest relative numbers were at Kibongoto and Arusha.

Schistosomiasis.—Of 4,307 cases treated, 639 were at Mwanza, 415 at Dar es Salaam, 264 at Dodoma and 219 at Tabora.

(3) SURFACE INOCULATION, CONTACT AND DROPLET INFECTION GROUP

Gonorrhoea.—Ten thousand seven hundred and twelve cases with eight deaths were recorded. The highest numbers treated at single hospitals were 1,430 at Bukoba, 833 at Mbulu and 805 at Dar es Salaam.

Syphilis.—Twenty-three thousand three hundred and seventy-four cases of all types were treated at government institutions and nineteen deaths were recorded. The greatest numbers were 2,981 at Bukoba, 2,355 at Tabora and 2,012 at Shinyanga.

Yaws.—Seventy-three thousand eight hundred and twenty-two cases and two deaths were recorded in government institutions. The greatest number treated at a single hospital was 11,825 at Kasulu and the highest relative numbers elsewhere were at Tukuyu and Kibondo. The total cases of syphilis and yaws treated at government institutions, and at missions to which assistance in the form of drugs is given by Government, are shown below :—

	Syphilis	Yaws
1933	33,058 ...	109,113
1934	33,701 ...	117,884
1935	34,581 ...	104,611
1936	39,503 ...	101,179
1937	31,348 ...	110,819

Leprosy.—There are thirty-one leprosy settlements in the Territory with a total of about 3,400 inmates. Eleven of these settlements are controlled by Government and the remainder by missionary societies. Assistance is given to mission-controlled settlements in the form of grants towards maintenance and of drugs and other material. A sum of £2,585 was actually expended on this work during 1937. Two hundred and twenty-six new cases with two deaths were reported during the year.

Smallpox.—The widespread outbreak of mild smallpox continued in 1937 in the rural areas of the Southern province and 1,462 cases were reported with 28 deaths : it is probable that the deaths were due to concurrent disease and not to this infection. A small outbreak occurred in the Morogoro district of the Eastern province, but was brought under control after nine non-fatal cases had occurred. Seven cases were reported in the Southern Highlands province with three deaths. Vaccination is being continued in the infected areas.

Cerebro-spinal Fever.—Cases of cerebro-spinal meningitis occurred during the year in almost all provinces, the total for the Territory being 269 cases with 125 deaths. The most serious outbreak was in the Kilosa district of the Eastern province, where 116 cases with 55 deaths were reported between September and November. It is probable that in some districts the infection had been introduced by imported labour from Ruanda-Urundi and restrictions were imposed on recruiting. Arrangements have been made for the provision of a travelling laboratory in order that subsequent outbreaks may receive earlier and fuller investigation on the spot. Not only will the care of the immediate cases be facilitated, but it is hoped that information may be obtained, regarding the local strains of infecting organism, which will prove of value for future treatment and prevention.

Tuberculosis.—During the year the first section of the Tuberculosis Village Settlement at Kibongoto was brought into operation. One hundred acres of land in the immediate vicinity of the hospital were obtained and on a part of this land six model dwellings, of a type readily reproduced by natives at little cost, were erected together with the necessary outbuildings. The six holdings have been defined by hedges, fruit and banana trees have been planted, roads and irrigation channels have been constructed and ploughing with communally-owned oxen has been carried out. Cattle have been purchased and an old cattle dip reconstructed. Five tuberculous families are now in occupation of houses and the conditions hold out promise of satisfactory development of the settlement. The occupants are working in hygienic surroundings under constant medical supervision, tilling the land and planting and tending crops. At present they draw rations from the hospital, but in return supply some garden produce and can occasionally market a surplus of this produce in the neighbouring town.

At the hospital the industrial side is being developed. A native instructress in pottery and mat weaving has been obtained and the manufacture of pots, baskets, mats and wooden articles is being actively carried on by hospital patients. The work of the hospital and dispensaries continues to expand. A close record of cases and contacts is maintained and the medical officer reports that although there is much to occasion disappointment, he has had the pleasure of watching diseased children, lymphatic and early pulmonary cases growing up into healthy adults. He records an increasing appreciation of the dangers of the disease and the need for early attention. It is not now uncommon in a place like Mwika, where the dispenser has been working for many years, to find a whole family waiting to be examined by the medical officer because a pulmonary case has died and they wish to know whether they have become infected.

Table showing incidence of Tuberculosis at the various stations in the Territory during 1935, 1936 and 1937

	1935				1936				1937			
	Pulmonary		Non-pulmonary		Pulmonary		Non-pulmonary		Pulmonary		Non-pulmonary	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Central Province.												
Dodoma	21	2	2	—	6	4	2	—	9	5	2	1
Kondoa	5	—	—	—	1	—	—	—	1	—	2	—
Manyoni	6	1	—	—	5	—	—	—	6	—	—	—
Mkalama	5	—	1	—	4	—	1	—	1	—	—	—
Mpwapwa	—	—	—	—	3	—	—	—	1	—	—	—
Singida	11	1	—	—	13	1	4	1	6	3	4	—
Eastern Province.												
Bagamoyo	3	—	—	—	10	—	—	—	7	3	—	—
Dar es Salaam:												
European Hospital	1	—	—	—	1	—	2	1	2	—	—	—
Sewa Hadji Hospital	41	—	6	2	53	—	3	1	43	4	5	—
Health Office ...	48	—	—	—	50	—	—	—	40	18	—	—
Private Practitioners	10	—	—	—	6	—	—	—	9	—	—	—
Kilosa	11	2	—	—	12	—	2	—	6	3	3	—
Mafia	—	—	—	—	—	—	—	—	—	—	—	—
Mahenge	3	—	—	—	12	—	—	—	11	—	1	—
Morogoro	17	5	6	—	17	2	9	2	24	7	6	2
Utete	1	—	—	—	10	—	—	—	8	—	1	—
Lake Province.												
Biharamulo	5	—	1	—	13	1	—	—	10	2	—	—
Bukoba	26	5	4	—	21	3	4	—	25	7	4	1
Musoma	7	—	—	—	7	—	2	—	3	—	3	—
Mwanza	19	2	2	—	19	2	1	1	19	—	5	1
Mwanza Health Office	14	—	—	—	7	—	—	—	17	—	—	—
Maswa	7	1	2	—	—	—	—	—	—	—	—	—
Shanwa	4	—	—	—	3	—	1	—	—	—	—	—
Shinyanga	5	—	1	—	—	—	—	—	1	—	—	—
Northern Province.												
Arusha	29	4	48	—	15	2	19	2	7	2	2	—
Mbulu	1	—	2	—	11	2	1	1	12	6	17	1
Moshi	96	7	25	2	83	4	48	—	50	7	50	2
,, Kibongoto* ...	128	13	181	—	881	10	775	—	1,301	6	677	1
,, District Work	460	—	446	—	253	—	114	—	—	—	—	—
Southern Province.												
Kilwa	2	—	2	—	1	—	—	—	15	—	1	—
Lindi	8	3	3	1	11	—	—	—	7	2	—	—
Liwale	—	—	—	—	1	—	1	—	—	—	4	—
Mikindani	10	—	—	—	10	1	—	—	13	—	—	—
Songea	5	—	1	—	2	2	4	1	4	1	3	1
Tunduru	2	—	1	—	2	—	—	—	—	—	8	—
Southern Highlands.												
Chunya	—	—	—	—	—	—	4	1	—	—	4	1
Iringa	7	2	1	—	6	1	3	—	8	4	2	—
Malangali	3	1	1	—	2	—	1	—	1	—	1	—
Mbeya	5	—	8	—	13	—	1	—	11	1	1	—
Mwaya	5	1	25	—	—	—	—	—	—	—	—	—
Njombe	—	—	—	—	—	—	—	—	1	—	—	—
Tukuyu	22	—	14	—	10	—	10	2	11	1	3	—
Carried forward ...	1,053	50	783	5	1,574	35	1,012	13	1,690	82	809	11

*Including District work in the figures for 1937.

TABLE SHOWING INCIDENCE OF TUBERCULOSIS AT THE VARIOUS STATIONS IN THE TERRITORY DURING 1935, 1936 AND 1937—*contd*

	1935				1936				1937			
	Pulmonary		Non-pulmonary		Pulmonary		Non-pulmonary		Pulmonary		Non-pulmonary	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Brought forward ...	1,053	50	783	5	1,574	35	1,012	13	1,690	82	809	11
Tanga Province.												
Handeni	—	—	—	—	—	—	—	—	—	—	—	—
Korogwe	11	—	1	—	12	—	6	—	16	—	2	—
Lushoto	5	1	3	1	4	1	2	—	9	2	2	—
Pangani	17	2	—	—	14	3	—	—	7	—	—	—
Tanga	55	4	13	1	102	16	10	2	158	23	18	2
Tanga Health Office	29	17	—	—	33	18	—	—	74	41	—	—
Usangi	50	—	53	—	157	—	63	—	112	—	111	—
Western Province.												
Kahama	12	1	—	—	6	1	—	—	5	—	—	—
Kasulu	1	—	—	—	2	—	1	—	1	1	—	—
Kibondo	5	1	—	—	7	2	5	1	7	—	3	1
Kigoma	8	—	1	—	4	2	4	1	4	2	—	—
Nzega	7	2	1	1	3	2	1	—	5	—	—	—
Sumbawanga ...	—	—	1	—	1	1	3	—	1	—	—	—
Tabora	28	1	2	—	15	3	3	1	20	1	2	—
Total ...	1,281	79	858	8	1,934	84	1,110	18	2,109	152	947	14

8. DEFICIENCY DISEASES

Scurvy has continued in the Lupa Controlled Area, 383 cases having been reported during the year. As a result of propaganda, however, cases have reported earlier for treatment, and the mortality rate has been low, only one death being attributed to this disease.

Nutritional Diarrhoea assumed serious proportions in the Morogoro district, 174 cases being reported with 108 deaths. The sufferers were mainly imported labourers on the local sisal estates, and factors in the causation of the disease were the unsuitable quality of certain recruits and too rapid changes in their dietetic and other habits. A second medical officer was posted for a time to Morogoro primarily to visit the sisal estates and to advise regarding the care of labour. Steps were taken to raise the physical standards required on recruitment, and hospital facilities were increased. Arrangements have been made for the construction of a complete new hospital at Morogoro in 1938.

9. HEALTH OF THE KING'S AFRICAN RIFLES

Four deaths among native troops occurred, and ten invalidings. Units were stationed at Dar es Salaam, Tabora, Masoko (near Tukuyu) and Arusha during the year. The mean effective monthly strength in Dar es Salaam was 318 with a sick rate of 0·08 per cent, the figures for the Territory as a whole being 1,088 and 1·39 per cent.

10. HEALTH OF PRISONERS

The general health of prisoners shows a slight reduction in the number of sick and in the death rate as compared with 1936. The sickness and death rates for the last five years are as follows :—

	Daily average number of prisoners	Daily average on sick list	Admissions to hospital	Number of deaths	Deaths per 1,000 prisoners
1933	2,518·09	82·3	1,231	43	17·07
1934	2,725·10	85·7	1,395	50	18·34
1935	2,602·30	85·0	1,514	67	25·74
1936	2,565·20	81·70	1,423	55	21·44
1937	2,523·40	80·20	1,357	54	21·40

11. PORT HEALTH WORK AND ADMINISTRATION

Routine port health work was carried out as in previous years. In June there was inaugurated by Imperial Airways, Limited, the regular England-South Africa flying boat service which calls at Dar es Salaam and Lindi, and all flying boats thereafter were inspected on arrival at those ports. The numbers of steamers, dhows and flying boats given pratique during the year at the different ports are as follows :—

Stations	Steamers	Dhows	Flying boats
Bagamoyo	10	165	—
Bukoba	52	97	4
Dar es Salaam ...	658	1,219	130
Kigoma	305	—	—
Kilwa	26	226	—
Lindi	131	219	124
Mafia	26	306	—
Mikindani	74	85	—
Musoma	80	243	—
Mwanza	53	1,171	—
Pangani	84	175	—
Tanga	486	555	—
Total ...	1,985	4,461	258

12. SANITATION

Sewerage.—Construction of the Tanga sewerage scheme has proceeded throughout the year and is expected to be completed in 1938. The need for a sewerage system in Dar es Salaam has become more pressing with the erection of many new buildings in the bazaar area. An abridged scheme has been prepared for a sea outfall, a collecting tank and a series of sewers to drain the more crowded parts of the commercial and residential zones.

Anti-malarial Drainage.—The anti-malarial drainage works for Dar es Salaam recommended by the Malaria Research Officer and financed by a £27,000 grant received from the Colonial Development Fund have been put into operation. At the end of the year the filling and draining works in Gerezani Creek were completed. The Kurasini and golf links schemes will be put in hand shortly.

Aedes Index

The table includes information in detail regarding the different parts of Dar es Salaam. Here searches were carried out by trained and experienced staff under regular European supervision and the findings may be accepted with some confidence. The figures for the other towns in the Territory are comparatively of little value as the type of searcher and the methods employed vary greatly with local conditions.

	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Mean Index
Arusha	–	–	–	–	–	–	–	–	–	–	–	–	–
Bukoba	·32	–	–	·07	·06	·05	·14	–	–	·07	–	·05	·06
Dar es Salaam:													
(Whole town excluding dhows)	3·51	1·47	2·53	4·64	4·59	2·5	·54	–	–	–	–	–	2·82
Zone I	·91	·46	1·01	3·41	4·37	·02	·87	–	–	–	–	–	1·58
,, II	2·39	1·55	2·01	3·63	3·44	2·21	·26	–	–	–	–	–	2·21
,, III	4·58	1·59	2·87	5·18	5·05	2·87	3·40	–	–	–	–	–	3·65
Dhows	3·12	–	–	–	5·66	10·77	29·9*	20*	12·4*	–	12·9*	–	–
							17·5†	12·2†	12·9†	–	8·1†	–	–
Area 1.—Masakara and Keko. Population mainly African	–	–	–	–	–	–	–	–	10·5	–	14	–	–
Area 2.—K.A.R. cantonment and Kurasini. Population mainly African	–	–	–	–	–	–	–	–	9·4	–	15·4	–	–
Area 3.—Ilala village and Msimbazi Mission. Population mainly African	–	–	–	–	–	–	–	–	10	–	14·7	–	–
Area 4.—Gerezani-Pugu road-Government School. Population mixed European and African and some Asians	–	–	–	–	–	–	–	–	15·7	–	17·2	–	–
Area 5.—New native town. Population African	–	–	–	–	–	–	–	–	13·9	–	21·5	–	–
Area 6.—Central Area. Population mainly Asian with some Africans	–	–	–	–	–	–	–	–	13·5	–	18·5	–	–
Area 7.—Residential Area. Population Europeans with few Asians	–	–	–	–	–	–	–	–	7·2	–	10	–	–
Area 8.—Upanga shamba. Population mainly African—few Asians	–	–	–	–	–	–	–	–	18·4	–	11·7	–	–
Area 9.—Cameron Road. Population mainly African	–	–	–	–	–	–	–	–	10·5	–	9·2	–	–
Area 10.—Magomeni-Msimbazi. Population African	–	–	–	–	–	–	–	–	11·8	–	9	–	–
Area 11.—Kinondoni and Oyster Bay. Population European and African	–	–	–	–	–	–	–	–	10·7	–	16	–	–
Area 12.—Kivukoni Area. Population													

*Dhows entering the harbour and searched on arrival. †Dhows remaining in the harbour and searched in normal routine.

AEDES INDEX—*contd*

African	–	–	–	–	–	–	–	–	35·3	–	38·2	–	–
Dodoma	–	–	–	–	–	–	–	–	–	–	–	–	–
Iringa	–	–	–	–	–	–	–	–	–	–	–	–	–
Kigoma	·17	–	·2	·2	4·4	–	–	–	·7	–	–	·2	·5
„ on ships	–	–	·2	–	–	–	–	–	–	·7	–	–	·07
Kilosa	6	8	18	64·5	19·3	6·4	4·6	7·6	*	*	*	19·5	17·1
Kilwa	7·8	8·7	9·7	8·5	10	2·6	3·1	1	1	2·5	1·8	4·2	5·07
Lindi	4·04	2·4	·99	1·23	·96	1·14	1·08	·84	·92	·87	1·22	2·49	1·51
„ on ships	7·69	8·82	5·2	–	–	–	–	–	–	–	20	–	2·64
Mikindani	·62	·75	·99	·61	·55	·48	·24	2·88	·47	·63	·7	·31	1·60
Morogoro	2·9	·66	·39	·51	1·3	2·3	1·3	2·4	1·3	1·2	·5	·39	1·26
Moshi	–	–	–	–	–	–	–	–	–	–	–	–	–
Mwanza	1·21	·5	†	†	·4	·1	·1	·1	·1	·2	·2	·9	·38
Pangani	18·1	–	25·8	22·8	24	6·7	4·8	6·4	2·7	5·3	4·72	4·1	10·45
Shinyanga	2·56	3·2	1·9	2·56	1·92	1·28	·64	1·28	1·47	1·68	2·15	1·18	1·82
Songea	·8	·8	1·6	·8	·8	–	–	–	3·7	·6	·8	·5	·86
Sumbawanga	6·3	5·6	–	–	–	–	5·65	–	–	–	–	–	1·46
Tabora	·8	·74	·7	·82	1·3	·77	·83	·89	1·1	·61	1·04	1·8	·95
Tanga	·4	·43	·54	1·3	1·13	·82	·52	·59	·56	1·2	·72	·6	·73
„ on dhows	–	2·5	3·7	14·7	7·9	7·4	4	–	9·6	8·3	7·4	3·9	5·78

*No returns as African Sanitary Inspectors were on C.S.M. duty. †No returns as African Sanitary Inspectors were on plague duty.

Dar es Salaam Areas 1 to 12 are a rearrangement of Zones I, II and III, Zone I now being shown as Areas 7 and 8, Zone II as Area 6 and Zone III as Areas 1-5, 9, 10 and 12 whilst Area 11 contains parts of all these zones.

Refuse disposal.—The system of disposing of town refuse by controlled tipping has been continued with success and further experiments in compost manufacture are being carried out.

13. STATISTICS

(1) GENERAL NATIVE POPULATION

In the most recent estimate (1937), the native population of the Territory is computed at 5,140,368. No reliable statistics relating to birth, death and infant mortality rates are available at present.

(2) GENERAL EUROPEAN POPULATION

Acknowledgment is made to the Registrar-General of Births and Deaths for a return of the registered deaths, a total of fifty-nine, which are summarized as follows:—

Causes of Deaths of Europeans during 1937

(Classified according to the Manual of the International List of Causes of Deaths, 1931)

Infectious and parasitic diseases	15
Cancer and other tumours	6
Chronic poisoning	1
Diseases of the circulatory system	8
,, respiratory system	6
,, digestive system	5
Non-venereal diseases of the genito-urinary system and annexa	3
Diseases of pregnancy, childbirth and the puerperal state	1
Diseases of early infancy	2
Old age	3
Affections produced by external causes	9
Total	59

(3) EUROPEAN OFFICIAL POPULATION

(For table of sick, invaliding and death rates, see page 40)

Deaths.—There were four deaths among European officials, one in the Territory and three in England:—

	1935	1936	1937
Suicide	1	—	—
Blackwater fever	1	—	—
Ruptured appendix	1	—	—
General peritonitis	1	—	—
Accident, drowning	1	—	—
,, aeroplane propeller	1	—	—
,, fall from aerial ropeway	—	—	—
Appendicitis	—	1	—
Aortic aneurysm	—	1	—
Cerebral malaria	—	1	—
Septicaemia	—	1	—
Myocarditis	—	1	1
Apoplexy	—	1	—
Total	7	6	1

The three deaths which occurred in England have not been included in the above table.

Invalidings.—Twelve European officials were invalided during the year as compared with six and nine during the two preceding years :—

	1935	1936	1937
Neurasthenia	1	2	1
Pleurisy	1	—	—
Cerebral gumma	1	—	—
Myocarditis	—	1	—
Appendicitis	1	1	—
Nervous exhaustion	1	—	—
Malignant swelling of maxillary gland	1	—	—
Malignant condition of abdomen	—	1	—
Sprue	—	1	—
Fracture, humerus	—	1	—
Malaria	—	1	—
Gastro-duodenitis	—	1	—
Aphasia	—	—	1
Sub-acute arthritis	—	—	1
Psoriasis	—	—	1
Chemical dermatitis	—	—	1
Chronic bronchitis	—	—	1
Arterio-sclerosis	—	—	1
Cancer	—	—	1
Nephritis	—	—	1
Mitral stenosis	—	—	1
Polyarthritis	—	—	1
Thrombosis	—	—	1
Total	6	9	12

(4) ASIAN OFFICIAL POPULATION

Deaths.—There was only one death among Asian officials during the year :—

	1935	1936	1937
Blackwater fever	2	—	—
Stricture of urethra	1	—	—
Peritonitis	1	—	—
Cholecystitis	1	—	—
Pneumonia	1	—	1
Enteric fever	—	1	—
Myocarditis	—	1	—
Stab wound, abdomen	—	1	—
Exfoliative dermatitis	—	1	—
Total	6	4	1

Invalidings.—Eleven Asian officials were invalided during the year:—

	1935	1936	1937
Pulmonary tuberculosis	2	—	1
General debility and premature senility...	2	1	1
Neurasthenia	—	1	1
Diabetes	—	2	1
Chronic interstitial nephritis	1	—	—
Fistula in ano	1	—	—
Aneurysm of the aorta	—	1	—
Malaria	—	1	—
Jaundice	—	1	—
Eczematous dermatitis	—	—	1
Melancholia	—	—	1
Myopia	—	—	1
Diverticulum of the colon	—	—	1
Hallucinations	—	—	2
Chronic dyspepsia	—	—	1
Total ...	6	7	11

(5) CLASSIFICATION OF HOSPITAL CASES AND DEATHS

Tables showing the classification of hospital cases and deaths by groups are given at page 41 and detailed list of diseases and deaths classified in groups for all races and for Europeans separately are at pages 59 and 63. The table of groups has been slightly altered from last year. "Diseases of the Skin and Cellular Tissue" have been combined into one group with "Diseases of the Bones and Organs of Locomotion." "Congenital Malformation" has been combined with "Diseases of Early Infancy."

Sick, Invaliding and Death Rates, European and Asian Officials

	European			Asian		
	1935	1936	1937	1935	1936	1937
1. Total number of Officials Resident	947	950	986	1,143	1,178	1,225
2. Average number Resident	587	589	611	834	860	898
3. Total number on Sick List...	570	641	682	809	1,068	1,236
4. Total number of days on Sick List	4,015	4,655	4,502	4,190	5,247	5,797
5. Average daily number on Sick List	11·00	12·75	12·33	11·48	14·38	15·88
6. Percentage of sick to average number Resident	1·87	2·16	2·02	1·38	1·67	1·77
7. Average number of days on Sick List for each Patient ...	7·04	7·26	6·60	5·18	4·91	4·69
8. Average sick time to each Resident	6·84	7·90	7·37	5·02	6·10	6·46
9. Total number invalided	8	9	12	6	7	11
10. Percentage of Invalidings to Total Resident	0·84	·95	1·22	0·52	0·59	0·90
11. Total Deaths	7*	5†	1‡	6	5	1
12. Percentage of Deaths to Total Resident	0·74	·53	0·10	0·52	0·42	0·08
13. Percentage of Deaths to average number Resident	1·19	·85	0·16	0·72	0·58	0·11
14. Number of cases of sickness contracted away from Residence	16	2	2	1	2	2

NOTE.—Three officials died in England, and are not shown in the above return or table of diseases and deaths (In- and Out-patients).

*One death not shown in the table of returns of diseases and deaths (in- and out-patients).
†Two deaths not shown in the table of returns of diseases and deaths (in- and out-patients).
‡This case died out of hospital but in the Territory and is not shown in the table of returns of diseases and deaths (in- and out-patients).

Cases and Deaths by Groups, 1936 and 1937 (Government institutions only)

	Cases		Deaths		Percentage of group to total cases		Percentage of deaths to total deaths	
	1936	1937	1936	1937	1936	1937	1936	1937
I.—Infectious and Parasitic Diseases	229,175	252,942	500	844	36·03	38·05	33·24	39·22
II.—Cancer and other Tumours	436	517	42	39	0·07	0·08	2·79	1·81
III.—Rheumatism, Diseases of Nutrition and of Endocrine Glands and other General Diseases	8,112	8,067	19	17	1·28	1·21	1·27	0·79
IV.—Diseases of the Blood and Blood-forming Organs	4,894	5,127	17	28	0·77	0·77	1·14	1·30
V.—Chronic Poisoning	18	58	...	2	...	0·01	...	0·10
VI.—Diseases of the Nervous and Sense Organs ...	51,720	56,308	60	61	8·13	8·45	3·99	2·83
VII.—Diseases of the Circulatory System	2,306	2,382	33	38	0·36	0·36	2·19	1·77
VIII.—Diseases of the Respiratory System ...	77,693	79,247	267	411	12·22	11·92	17·76	19·09
IX.—Diseases of the Digestive System	95,209	97,510	154	263	14·97	14·67	10·24	12·22
X.—Non-venereal Diseases of the Genito-urinary System and Annexa	5,340	5,648	70	60	0·84	0·85	4·65	2·80
XI.—Diseases of Pregnancy, Childbirth and the Puerperal State	3,764	1,223	37	37	0·59	0·20	2·46	1.72
XII.—Diseases of the Skin, Cellular Tissue, Bones and Organs of Locomotion	111,938	103,569	91	99	17·60	15·60	6·05	4·60
XIII.—Congenital Malformation and Diseases of Early Infancy	680	488	9	12	0·11	0·07	0·60	0·56
XIV.—Old Age	219	170	23	29	0·03	0·03	1·52	1·35
XV.—Affections produced by External Causes ...	40,984	45,739	148	163	6·44	6·88	9·84	7·57
XVI.—Ill-defined Diseases	3,549	5,693	34	49	0·56	0·85	2·26	2·27
Total ...	636,037	664,688	1,504	2,152	100·00	100·00	100·00	100·00

Note.—The classification is in accordance with the Manual of the International List of Causes of Death, 1931 edition.

III.—HEALTH CONDITIONS AND MEDICAL WORK IN THE PROVINCES

A. EASTERN PROVINCE :

(i) *Dar es Salaam.*—The Public Health Department has this year been relieved of certain duties, in that the control of town refuse collection and street sweeping has been transferred to the Executive Officer of the Township Authority, and the central sanitation store has been handed over to the Pharmacist. More time will thus be rendered available for district work, school inspection, infectious disease control and similar duties.

The anti-malarial draining and filling works in Gerezani creek were completed by the end of the year. Catching and dissecting of adult anophelines from fourteen separate areas of the town showed Kurasini and Keko still to be the most heavily infected, with Msimbazi and Ilala taking second place ; while the infection rate in Kivukoni is not significantly different from that of the remaining areas. Two *aedes* surveys have shown heavy breeding not only in water vessels in the native town, but also in tins, coconut-shells and other rubbish in overgrown parts of the residential area.

Borehole latrines constructed in the native town have been disappointing owing to collapse of the sides caused by the sandy nature of the soil. Experiments are being continued with various types of lining. Construction of drains in Msimbazi Street has greatly improved conditions in the swampy areas near the native market.

The action taken last year to improve the dairies which provide the township milk supply was continued and the owners of about two-thirds of the local milking cattle made some progress towards complying with requirements for satisfactory premises.

Port health work was increased by the routine inspection of the flying-boats on the South African service.

Two cases of diphtheria and two cases of cerebro-spinal meningitis occurred in the town during the year.

(ii) *Morogoro.*—The outstanding event in Morogoro district has been the grave incidence of nutritional diarrhoea amongst the imported labour on local sisal estates. Many factors have played a part in producing this condition—recruits of poor physique, diets which are unsuited to up-country natives, poor housing and inadequate medical facilities. Steps have been taken to improve medical inspection, to advise employers in feeding and housing problems and to increase local hospital facilities.

(iii) *Kilosa.*—An epidemic of cerebro-spinal fever occurred between August and November. Forty-one cases with eleven deaths were treated in hospital, and 75 cases with 44 deaths were reported in the district. It is probable that many other deaths occurred in rural areas in the early stages of the outbreak. Medical staff in the district was increased and the epidemic was arrested before the end of the year.

B. CENTRAL PROVINCE :

Two outbreaks of infectious disease occurred in the Dodoma district. One of these was measles, 230 cases of which were diagnosed. There were six deaths. Another was an influenza-like condition which attacked a large number of the native population at Mvumi some distance south of Dodoma. During this outbreak three patients were admitted to the Dodoma hospital from Mvumi in an unconscious condition. They all died, and on post-mortem examination a diagnosis of encephalitis was made.

Sporadic cases of sleeping sickness occurred in the Mkalama section (formerly a separate district) of Singida district. The clearing of bush as an anti-tsetse measure is being continued. Seventeen and a half square miles were cleared in 1937. Plague also occurred in Mkalama but was arrested within a few weeks of its outset.

Good work continues to be done by the Church Missionary Society, particularly in maternity and child welfare.

General medical work of a high standard is being carried out by the medical staff of the Lutheran Mission. Dr Johnson and Dr Norberg in the Singida stations of this mission are giving considerable assistance to Government in training native staff for rural medical work. There were nine young men in training at their two hospitals at the end of the year.

At the mental hospital, Dodoma, ten new single-bedded wards have been added to the African section, four being for males and six for females.

C. LAKE PROVINCE :

The occurrence of plague in Mwanza town caused a considerable amount of dislocation of trade for some months, while cerebro-spinal meningitis interfered with the recruitment of labourers and caused some anxiety in Biharamulo, Bukoba and Mwanza. As a result of the plague outbreak a good deal of reconstruction was carried out in Mwanza town, which would have been difficult of achievement in the time if the menace of this disease had not acted as a stimulus. In particular, rat-proof godowns have been built and some slum areas have been cleared. A ten year programme of rebuilding has been introduced whereby a tenth of the commercial area is, where necessary, to be demolished and rebuilt each year.

Work is being continued on the differential diagnosis of venereal diseases, particularly at Mwanza, Bukoba and Musoma. Most of the cases of deficiency diseases recorded were met with in Mwanza and Bukoba. At the former station sixteen cases diagnosed as scurvy were treated as out-patients. In Bukoba the Medical Officer noted that a number of the poorer classes, particularly from the western side of the district and mostly of the Ruanda and Rundi tribes, show a roughness of the skin of the extensor surfaces of the arms, thighs and legs. Most of the cases showing this condition were weak and had chronic dysenteric symptoms.

During the year a special attempt was made to improve health conditions in a number of the more important minor settlements. A senior sanitary superintendent was posted to the province for this purpose in January. He made his headquarters at Shanwa in Maswa district. His attention was very largely confined to nine minor settlements and he dealt for the most part with anti-malaria measures (such as drainage, levelling and planting of trees in swamps), housing and some anti-plague measures. The improvement of native housing made little progress among the general population. Among the higher salaried government employees on the other hand modern houses are usually popular.

A disinfesting station for hides and skins was erected near Shanwa.

The medical schools for tribal medical auxiliaries were continued at Mwanza, Bukoba and Musoma. Ten of the auxiliaries trained at Mwanza are now in the districts. Their work is reported to be good and very much appreciated by the native population.

The following table shows the number of operations performed during the year at five stations :—

Biharamulo (including Ngara) ...	95
Bukoba	389
Musoma	405
Mwanza	454
Shinyanga	84
Total ...	1,427

Operative work is also carried out at some of the smaller stations, particularly Shanwa.

An air port isolation hospital has been provided at Bukoba. It consists of an examination room and two wards. The building is provided with mosquito-proof doors and windows. In Bukoba one hundred and ninety-three Schick tests were carried out on adults. They were all negative.

D. Northern Province :

Four cases of plague were reported in Mbulu district during March. In order to avert danger from hides exported from Mbulu the trade was concentrated on special sites at Arusha and Moshi and a disinfesting shed was erected at Arusha.

Thirty-nine sporadic cases of cerebro-spinal meningitis with twenty-seven deaths were reported in the province. As in Tanga, cases were apparently unconnected and occurred chiefly amongst alien labourers.

Routine anti-mosquito measures were continued at Moshi where anopheline prevalence persisted longer than is usual owing to the unprecedented flooding of certain areas. Anti-mosquito drainage at Arusha was improved. A small anti-malarial unit was employed at Usa, and is believed to have effected a considerable reduction in mosquito incidence and in the length of the transmission season.

As an educational measure in the campaign against ankylostomiasis a number of concrete squatting-plates for latrine-tops were made and distributed to dispensaries, chiefs' headquarters and estates.

Terminal examinations were made of all pupils at Arusha European School, and fortnightly visits of inspection were paid to the African Government School at Old Moshi.

A new hospital with accommodation for twenty-five in-patients was erected at Usangi by the Native Authorities.

E. Southern Province :

Diseases which required special attention in this province during the year were smallpox and sleeping sickness. Outbreaks of both these diseases are referred to in the 1936 report. Smallpox continues to be mild and creates little dislocation in the everyday life of the people except that the areas affected are not open to recruitment for work outside their districts. Progress has been made with the vaccination of the general population, over 102,000 vaccinations being recorded for the province during the year. Sleeping sickness is sporadic. The outbreak in Liwale district appears to remain circumscribed, but it is not claimed that even approximately all the cases that occur are known. A general survey of the district is being carried out in preparation for closer sleeping sickness control.

Leprosy is reported to be common in the districts of Masasi and Newala. Treatment is carried out by the staff of two mission bodies receiving assistance from Government. About four hundred of the cases under treatment are being kept under special observation. Florid yaws is frequently met with.

In the town of Lindi, where malaria is an important disease, progress is being made with anti-malarial measures. A seepage area below the hospital has been successfully dealt with by means of French drains. The other permanent measures consisted very largely of levelling. This is done by controlled tipping of the town refuse. Unfortunately all the refuse cannot be disposed of in this way and a certain amount of incineration has still to be done.

F. SOUTHERN HIGHLANDS PROVINCE :

(i) *Iringa.*—In Iringa district two sporadic cases of bubonic plague occurred : a rat destruction campaign was carried out and over one hundred insanitary huts in Iringa town were destroyed : there was no spread of the disease.

Malaria cases in Iringa township showed an increase but draining and oiling works were carried out in the native area and a number of borrow-pits were filled. Over three hundred gum-trees were planted in a swampy area in the town and five hundred others will be added shortly. Fourteen cases of cerebro-spinal meningitis with three deaths occurred : the infection was believed to have arisen from carriers from Tanga or Kilosa. Seven cases of smallpox with three deaths occurred near the Kilosa road : over eight thousand vaccinations were performed in this area.

In Iringa township all premises have been provided with latrines and all meat is inspected before sale ; taeniasis and ankylostomiasis are consequently rare. Both these conditions are, however, very common throughout the district.

(ii) *Malangali.*—Malangali hospital was improved by the construction of a new ward, a new store and two new latrines. Amongst the cases treated in this hospital were over twenty of night blindness : these were attributed to avitaminosis and all responded to appropriate treatment.

(iii) *Njombe.*—An epidemic of measles occurred in the Lupembe area of Njombe district between August and October and was responsible for several deaths amongst children.

(iv) *Mbeya.*—Only eight cases of enteric were treated in this station compared with seventeen in 1936 and twenty-eight in 1935 : the decrease is attributed to campaigns of inoculation and reinoculation. Scurvy also showed a welcome decrease, ninety-five cases occurring as compared with two hundred and four in 1936 and two hundred and eighty-seven in 1935 : all were from the Lupa area and generally reacted favourably to treatment with fresh fruit.

(v) *Chunya and the Lupa.*—Hospital facilities have been much improved. A clearing station was opened at Chunya early in the year and improved European accommodation is now under construction. Dispensaries at Kungutas, Sengambia and Lupa Market have filled an urgent need in the diggings.

The number of scurvy cases was high (383) but as a rule application for treatment was made in the early stages of the disease with the result that advanced cases, such as occurred during 1936, were rarely seen. The chief measures required against scurvy are provision for the care of labourers on the long labour routes and the education of employers in prophylaxis against the disease. Citrus culture in the area is being encouraged.

Prostitution and venereal disease are common in the controlled area and it is thought that conditions under which permits of entry are issued may have to be tightened.

G. TANGA PROVINCE :

The year 1937 showed an increase in the incidence of chickenpox, measles, pulmonary tuberculosis and cerebro-spinal meningitis. Meningitis did not occur in epidemic form but sporadically, the majority of cases being found among imported labourers.

(i) *Tanga Township.*—Construction of the new sewerage system has been continued and is expected to be completed in 1938. The advantages of the new system will include a diminution in the number of insanitary cesspits and soakage pits, which, owing to the high level of the subsoil water in Tanga, have been sources of prolific mosquito breeding. Larval searches throughout the year show the following percentages : Culex 52, Aedes 42, Anopheles 6.

Several European residences have been built during the year in the Nguvumali area just outside the township boundary. The extension of the township boundary to include this area is under consideration. Many unauthorized buildings in the Machinyango area of the township are being demolished in order to secure a proper layout of this area.

Legislation is under consideration to check the practice now prevalent in Tanga and elsewhere of slaughtering cattle and exposing the meat for sale at places which, as they are outside the township boundary, cannot be controlled under the present laws.

(ii) *Muheza.*—A layout has been prepared for Muheza and realignment of buildings is proceeding.

(iii) *Korogwe.*—Investigations have been continued with a view to removing this township from its present insanitary and malarious site. The erection of new residences on Fundi Hill is under consideration. Such buildings would be at a greater altitude than the present town and about a mile from the Pangani River which is the chief local source of anopheline breeding.

H. WESTERN PROVINCE :

Progress was made with the control of sleeping sickness in the province, and about one thousand five hundred families were settled in new concentrations. Some one hundred and fifty other families moved into old settlements. The incidence of the disease is diminishing, only one hundred and sixty-eight new cases having been recorded during 1937 as against two hundred and eighty-four the previous year.

Sporadic cases of cerebro-spinal fever occurred in the Kigoma, Kahama and Tabora districts. The Kigoma outbreak, which was confined to the Uha area, though not important in itself (only seven cases were reported), interfered considerably with the supply of labour to the sisal estates, as it was found advisable to close the area to labour recruiting for seven months. These precautions were necessary because there was a similar outbreak on a larger scale in the Ruanda-Urundi Mandated Territory which borders on Uha.

Most stations in this province are malarious, but in the towns of Tabora and Kigoma some progress is being made with anti-malaria measures. Controlled tipping of refuse on mosquito breeding grounds has very largely taken the place of incineration in Kigoma, and this system is also in use in parts of Tabora township. Both places improved their drainage systems during the year.

An unusually large number of cases of beri-beri, forty-three in all, were diagnosed at Tabora hospital.

A new laboratory and quarters for married students were erected near the native hospital for the use of tribal dressers under training. To complete the buildings for a medical school, a dormitory and a refectory for unmarried students are required.

IV.—EDUCATION OF THE PUBLIC IN HYGIENE

A list of educational pamphlets published during the year will be found on page 18. Articles on medical and health matters were contributed to the local press as usual.

V.—SPECIAL RESEARCH

1. Tuberculosis

The final report by Dr C. Wilcocks on the investigations carried out in the Territory between 1930 and 1936 with assistance from the Colonial Development Fund has been published. His survey, which has been carried out from headquarters at Moshi, relates also to many other parts of the Territory with differing conditions of environment, and demonstrates the high incidence of infection throughout the areas examined and particularly in the areas of dense population. It has been shown that bovine tuberculosis is not at present a factor of importance in the spread of human tuberculosis in the Territory.

The largest number of pulmonary cases seen was between the ages of fifteen and thirty-five and they showed a preponderance of cases of acute ''galloping'' consumption. There is reason to think that the resistance to infection of natives of East Africa is not so great as that of the white races and they appear as regards resistance to lie midway between the completely primitive races and the relatively resistant European. The comparative incidence found in different parts of the Territory is shown on page 34 of the report. The report concludes with the hope that natives may acquire better powers of resistance to the disease through the availability of early treatment, an improved standard of living and other means which are within our power to provide.

2. Trypanosomiasis

Dr Corson's research work at Tinde was described in the 1936 report. This work is being continued. That done in 1937 included two experiments in which the infection of volunteers by *Trypanosoma rhodesiense* was attempted. The strain of trypanosome used, which was the same in both experiments, had been transmitted by tsetse from man to sheep in October 1934, and had been maintained, by tsetse transmission, in sheep and antelopes up to the time of the experiments. In the first experiment a fly infected with this strain from an impalla was first fed on volunteer *A* and, a fortnight later, on volunteer *B*. The second volunteer became infected; the first did not. The fly used in this experiment infected a bushbuck, and another fly, infected from this animal, was used in the second experiment. It was fed on volunteer *C* and eight days later on volunteer *D*. The latter became infected; volunteer *C* did not. These two experiments, which were completed by August 1937, may be regarded as part of a major experiment which was commenced in October 1934, and has been carried out in a way that closely resembles some of the conditions which can occur in Nature. This major experiment is not yet completed. It will be necessary to keep this and other strains of *T. rhodesiense* under observation, to see whether, after some years, they will lose, in whole or in part, their power to infect man.

Observations on the transmission of *Trypanosoma gambiense* through *Glossina morsitans* were continued. In monkeys the strain transmitted to them through *G. morsitans* has not shown any resemblance to *T. rhodesiense*. The same is true in respect of most of the rats and guinea pigs used in the experiment, but in one guinea pig and one rat there was some similarity. In this particular guinea pig the infection was not acute, but during the later months the large number of trypanosomes in the blood and the proportion of them that showed posterior nuclear forms gave an appearance, in a thin film, which was indistinguishable from *T. rhodesiense*. In the rat, the infection was as acute as that ordinarily produced by *T. rhodesiense*, but no posterior nuclear forms were seen. Sub-inoculations made from these animals did not indicate that any stable alteration in the virulence of the strain had developed.

In an experiment carried out in 1936, an account of which was published in 1937, Dr Fairbairn, working with the strain of *T. rhodesiense* used by Dr Corson in the experiments described above, found that a human subject was susceptible to this strain, while serum collected from him on the day of the inoculation appeared to kill completely the same strain *in vitro*.

Observations were carried out by Mr Eric Burtt on the ability of *Glossina brevipalpis* to transmit *T. rhodesiense* biologically. The last part of the experiment will be completed by Dr Corson in 1938.

The titles of papers published on trypanosomiasis research are shown in the list of publications in the addenda.

3. MALARIA

The final reports on malarial research in the Territory by the Malaria Research Officers stationed in Dar es Salaam and in the Northern Province are now in course of printing.

The major works at Dar es Salaam resulting from the Malaria Research Officer's investigations and financed by the Colonial Development Fund loan have been continued. Filling and draining operations in Gerezani creek have been completed and preliminary work has begun on the Kurasini and golf links areas.

Provision has been made by the Government of the Territory in the 1938 estimates for the appointment of a medical officer of specialist rank to be employed on the investigation and control of mosquito borne diseases. This officer will be in a position to assess the value of the measures taken as a result of the recommendations made during the malarial research survey.

ADDENDA

LIST OF SCIENTIFIC PAPERS PUBLISHED BY MEMBERS OF THE STAFF IN 1937

(*See* also list in the laboratory report at page 67.)

CALWELL, H. G. "The pathology of the brain in Rhodesian Trypanosomiasis." *Trans. Roy. Soc. Trop. Med. and Hyg.*, 1937, 30, 6, 611-624.

CORSON, J. F. "Are experiments with trypanosomes in laboratories in tropical Africa vitiated by accidental infection?" *Trans. Roy. Soc. Trop. Med. and Hyg.*, 1936, 30, 3, 309-312.

Corson, J. F. "Experimental transmission of *Trypanosoma gambiense* by *Glossina morsitans* through monkeys." *Ann. Trop. Med. and Parasit.*, 1936, 30, 4, 389-400.

Corson, J. F. "A second note on a high rate of infection of the salivary glands of *Glossina morsitans* after feeding on a reed buck infected with *Trypanosoma rhodesiense.*" *Trop. Med. and Hyg.*, 1936, 30, 2, 207-212.

Corson, J. F. "The influence of repeated transmissions in animals on the virulence of *Trypanosoma rhodesiense* and *Trypanosoma brucei.*" *Ann. Trop. Med. and Parasit.*, 1936, 30, 2, 211-220.

Corson, J. F. "Further observations on a strain of *Trypanosoma gambiense.*" *Ann. Trop. Med. and Parasit.*, 1937, 31, 2.

Corson, J. F. "A note on the infectivity to man of a strain of *Trypanosoma rhodesiense* maintained in sheep." *Jl. Trop. Med. and Hyg.*, 1937, 40, 16.

Corson, J. F. "The virulence of *Tryponsoma rhodesiense* in relation to cyclical passage through *Glossina morsitans.*" *Trans. Roy. Soc. Trop. Med. and Hyg.*, 1937, xxxi, 2, 251-254.

Corson, J. F. "The use of isolated infective flies in transmission experiments with *Glossina morsitans* and *Trypanosoma rhodesiense.*" *Jl. Trop. Med. and Hyg.*, 1937, 40, 20, 248-249.

Corson, J. F. "A second note on the infectivity to man of a strain of *Trypanosoma rhodesiense*; resistance of two African volunteers to infection." *Jl. Trop. Med. and Hyg.*, 1937, 40, 21, 263-266.

Connell, W. K. "Duodenal ulcer in Tanganyika." *E. Afr. Med. Jl.*, 1937, xiv, 3, 89-90.

Fairbairn, H. "The infectivity to man of a strain of *Trypanosoma rhodesiense* transmitted through sheep by *Glossina morsitans* and its resistance to human serum *in vitro.*" *Ann. Trop. Med. and Parasit.*

Speirs, R. C. "Some observations on malaria in the Northern Province of Tanganyika with special reference to immunity"—(submitted as a thesis.)'

Wilson, D. B. "Colonial Development Fund (Malaria Research Scheme) Report of the malaria unit, Tanga, 1933-34, together with a report on a study of malaria in India." 72 pages—with 4 maps and 16 figs., 1936.

Wilson, D. B. and Wilson, M. E. "The manifestations and measurement of immunity to malaria in different races. *Trans. Roy. Soc. Trop. Med. and Hyg.*, 1937, 30, 41, 431-448.

Wilson, D. E. and Singh, Hari. "A case of human rabies in the Central Province of Tanganyika." *E. Afr. Med. Jl.*, 1936, xiii, 6, 185-186.

THE CURRICULUM FOR AFRICAN DISPENSERS

Practical Instruction

Practical instruction is received in the wards and special departments of the hospital daily between 7.30 a.m. and 10.30 a.m. under the supervision of the nursing sisters, sub-assistant surgeons and trained orderlies. This instruction covers the whole field of hospital practice and includes practical dispensing, microscopic work, intravenous and intermuscular injections, examination of out-patients and operating theatre routine. Probationers are also posted in rotation for duty at the Infectious Diseases Hospital, the Central Laboratory and the Dental Clinic.

Examinations are held in June and December each year and students who fail in physics, chemistry, anatomy and physiology, after two trials, are not permitted to proceed with the course.

During the first post-graduate year dispensers are given an opportunity, as vacancies occur, to specialise in one branch or other, such as teaching, laboratory work or hospital dispensing. Revision courses are also arranged as occasion may arise.

Standard of knowledge required

A student is required to pass Standard X (i.e. two years' secondary education) before beginning his medical studies. After qualifying he is expected to be able to conduct an out-patient clinic and should know which cases should be referred to a senior officer. He is expected to undertake the routine duties of a junior house physician or house surgeon and, in addition, to deal with hospital returns, to keep a store ledger, to undertake routine laboratory work and to dispense stock mixtures. Specialists in teaching, laboratory work and compounding are expected to perform their duties to a standard which is tested by special examinations.

The time devoted to systematic teaching is indicated in the following tables :—

Subjects and hours of Instruction

FIRST YEAR

Subject	Number of sessions and their duration	Total number of hours' instruction in the academic year
Anatomy and Physiology	3 weekly of 1 hour	132
Chemistry and Physics*	2 ,, 1½ hours	33
Practical Pharmacy	2 ,, 1½ ,,	132
Pharmaceutical Arithmetic	2 ,, 1½ ,,	132
Practical nursing	1 ,, 1 hour	44
Elementary Clinical Medicine†	1 ,, 1 ,,	22

SECOND YEAR

Subject	Number of sessions and their duration	Total number of hours' instruction in the academic year
Clinical Medicine	3 weekly of 1½ hours	198
Pharmacology and Therapeutics	1 ,, 1 hour	44
Elementary Clinical Pathology	2 ,, 1½ hours	132
Hygiene	1 ,, 1 hour	44
Revision classes	2 ,, 1½ hours	132

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*Term of 11 weeks only. †Lectures given during second term only.

THIRD YEAR

Subject	Number of sessions and their duration	Total number of hours' instruction in the academic year
Clinical Medicine and Surgery	3 weekly of 1½ hours	198
Systematic Medicine including Preventive Medicine	1 ,, 1 hour	44
Pharmacology and Therapeutics	1 ,, 1 ,,	44
Systematic Surgery	1 ,, 1 ,,	44
Clinical Pathology	2 ,, 1½ hours	132
Hygiene	1 ,, 1 hour	44
Revision classes	2 ,, 1½ hours	132

The academic year of 44 weeks is divided into two terms of 22 weeks.

The minimum period in which the course can be completed is three years.

Curriculum for Higher Grade Tribal Dressers

(*Medical Auxiliaries*)

A student is required to have passed Standard V at least before beginning his medical studies and a higher standard is encouraged. The duration of the medical course is not less than eighteen months and those students who combine practical hospital or dispensary work with systematic study may prolong their training to three years. On completion of the course they are expected to know the following :—

The cause, prevention, diagnosis and treatment of : anthrax, bilharzia, chickenpox, gonorrhoea, hookworm, leprosy, malaria, orchitis, plague, pulmonary tuberculosis, relapsing fever, roundworm, sleeping sickness, smallpox, syphilis, tapeworm, whooping cough.

The diagnosis and treatment of : abscess, arsenic poisoning, bronchitis, burns, carious tooth (extraction), conjunctivitis (simple, angular and purulent), constipation, diarrhoea, impetigo, otorrhoea, pleurisy, pyorrhoea, pneumonia, scabies, snake bite, thrush, ulcer, yaws.

The significance of the following symptoms and signs, provided they can be demonstrated : adenitis, blood or mucus in the stools, cyanosis, delirium, fever, gangrene, haematemesis, haematuria, haemoptysis, headache, inequality of the pupils, jaundice, oedema and its site, pallor of mucous membranes, rapid breathing, rigidity of the abdomen, rigidity of the neck, splenomegaly, tachycardia, vomiting.

A knowledge of the following is expected if clinical material is available : asthma, blackwater fever, cardiac failure, cataract, cerebro-spinal meningitis, diabetes, dysentery, enteric, epilepsy, hemiplegia, influenza, laryngitis, measles, mumps, quinsy, ringworm, spinal caries, trachoma.

AUTHORIZED ESTABLISHMENT OF THE DEPARTMENT

Staff.—*European:*

Director of Medical Services.
Deputy Director of Medical Services.
Assistant Director of Medical Services.
Secretary. (Seconded from Provincial Administration.)
4 Senior Medical Officers.
3 Senior Health Officers. (One post not filled.)
1 Sleeping Sickness Officer.
2 Specialists.
34 Medical Officers. (One partly paid from Colonial Development Funds.)
1 Senior Pathologist.
1 Pathologist.
1 Senior Dental Surgeon.
1 Dental Surgeon.
1 Government Analyst.
1 Anti-Malarial Engineer.
1 Matron.
1 Assistant Matron.
3 Senior Nursing Sisters. (Two posts unfilled.)
1 Senior Health Visitor.
5 Sisters and Health Visitors.
27 Nursing Sisters.
1 Laboratory Assistant.
1 Chief Clerk.
1 European Clerk.
1 Pharmacist.
2 Assistant Pharmacists.
1 Medical Instructor.
1 Superintendent, Mental Hospital.
1 Supervisor of Female Patients.
1 Senior Sanitary Superintendent.
20 Sanitary Superintendents.
7 Agricultural Surveyors.
1 Dental Mechanic.
1 Assistant for Trypanosome Research.

Asian:

1 Assistant Surgeon.
3 Senior Sub-Assistant Surgeons.
51 Sub-Assistant Surgeons.
28 Compounders.
8 Non-European Nurses.
1 Special Grade Clerk.
2 First Grade Clerks.
8 Second Grade Clerks.
9 Third Grade Clerks.
1 Fourth Grade Clerk.
1 Grade II Clerk (Local Civil Service).
1 Grade III Clerk (Local Civil Service).

African:

19 Clerks.
117 Dispensers.
140 Sanitary Inspectors.
Hospital orderlies, nurses and menials : average number employed—760.
Sanitary labourers : average number employed—1,100.
17 Motor Drivers.

APPOINTMENTS.—*European:*

Pathologist : Dr D. E. Wilson from the 1st January.
Medical Officer : Dr E. J. Foley from the 21st April.
Dental Surgeon : Mr P. H. Tatchell from the 5th January.
Secretary, Medical Department : Mr W. F. Page from the 1st January. (Seconded from Provincial Administration.)
Senior Nursing Sister : Miss R. V. G. Daye from the 1st March.
Nursing Sisters : Miss W. A. Rye from the 29th May ; Miss S. M. Jowsey from the 6th August ; Miss F. M. Bacon from the 2nd September ; Miss E. Mangan from the 2nd September ; Miss L. E. Salter from the 3rd September ; Miss E. M. Mann from the 18th September ; Miss L. A. Locke from the 16th October ; Miss P. M. Glanville from the 28th October ; Miss B. M. Jemmett from the 13th November ; Miss I. Russell from the 13th November ; Miss C. M. G. Morton from the 11th December.
Pharmacist : Mr H. M. W. Nicholson from the 1st March.
Assistant Pharmacist : Mr R. S. Cayzer from the 27th August.
Agricultural Surveyor : Mr J. Dickson from the 1st June.
Assistant for Trypanosome Research : Mr J. R. Allen from the 21st January.

Asian:

Sub-Assistant Surgeon : Mr T. C. Chhabra from the 18th December.
Clerk, First Grade : Mr A .P. Brambhatt from the 15th July (from Township Authority on promotion).
Clerk, Third Grade, Local Civil Service : Mr Ram Murti from the 8th March.

ACTING APPOINTMENTS.—*European:*

Director of Medical Services : Dr G. Maclean from the 27th August to the 31st December.
Deputy Director of Medical Services : Dr R. Nixon from the 27th August to the 31st December.
Assistant Director of Medical Services : Dr C. F. Shelton from the 27th August to the 31st December.
Senior Pathologist : Dr D. E. Wilson from the 22nd May to the 31st December.
Senior Health Officers : Dr W. H. Smith from the 28th November to the 31st December ; Dr W. J. Aitken from the 7th December to the 31st December.

PROMOTIONS.—*European:*

Mr H. M. W. Nicholson to be Pharmacist as from the 1st March.
Miss R. V. G. Daye to be Senior Nursing Sister as from the 1st March.

Asian:

Mr E. C. Rebello to be a Second Grade Clerk as from the 14th April.
Mr R. D. Pandya to be a Second Grade Clerk as from the 19th December.

RETIREMENTS.—*European:*

Miss A. Muncaster, Senior Nursing Sister, 2nd February.
Mr N. McL. Moore, European Clerk, 6th February.
Mr H. W. Hassard, Medical Storekeeper, 28th February.
Mr F. J. White, Agricultural Surveyor, 6th June.

Asian: Nil.

RESIGNATIONS.—*European:*

Miss A. R. Lamb, Nursing Sister, 19th January.
Miss E. V. St Lo Malet, Nursing Sister, 1st May.
Miss B. V. Thompson-Allen, Nursing Sister, 24th August.
Miss A. F. Chisholm, Nursing Sister, 8th September.
Miss B. M. Gadd, Nursing Sister, 7th November.
Miss V. Burgin, Nursing Sister, 23rd November.

Asian: Nil.

APPOINTMENTS TERMINATED.—*European:*

Miss O. J. Steer, Nursing Sister, 4th January.
Miss L. M. Bishop, Nursing Sister, 30th June. (Medical grounds.)

Asian:

Mr M. A. Vaishnav, Compounder, 12th March.
Mr Basant Singh, Sub-Assistant Surgeon, 23rd November.

INVALIDINGS.—*European:*

Miss L. M. Bishop, Nursing Sister, 30th June.

Asian: Nil.

DEATHS.—*European:*

Miss A. A. Howorth, Sister and Health Visitor, 28th September.

Asian:

Mr Hakdad Khan, Compounder, 25th April.

TABLE SHOWING FINANCIAL DETAILS

From the 1st January to the 31st December 1937

DETAILS OF EXPENDITURE

Expenditure:	Approved Estimates £	Actual Expenditure £
Personal Emoluments	146,066	140,506
Other Charges:		
Outfit Allowances	240	330
Upkeep of Hospitals	6,750	7,578
Upkeep of Quarantine and Infectious Diseases Hospitals	180	193
Tuberculosis Scheme	366	383
Upkeep of Laboratory, Dar es Salaam	50	58
Upkeep of Lymph Laboratory, Mpwapwa	60	48
Maintenance of Leprosy Patients	2,700	2,585
Maintenance of Mental Patients and Hospitals	1,600	1,435
Epidemic Outbreaks and Special Sanitary Measures	50	387
Sleeping Sickness Measures	3,050	2,306
Venereal Diseases and Yaws	25	25
Maternity and Child Welfare	1,245	1,118
Sanitary Equipment	584	555
Sanitary Oils and Disinfectants	290	160
Food for and purchase of oxen	50	31
Medical and Surgical Stores	12,300	12,256
Equipment and Furniture	5,700	4,779
Microscopes and Accessories	210	191
Vaccines and Sera	300	307
Books of Reference	60	56
Periodicals	115	101
Post-mortem Fees	342	888
Electricity	1,300	1,317
Travelling Allowances	676	551
Transport Allowances	3,607	3,615
Transport	2,354	2,883
Railway Fares and Freight:		
(a) Departmental Expenditure	6,351	6,144
(b) Local Leave	690	364
Tents and Camp Equipment	142	124
Uniforms	317	315
Typewriters	100	119
Allowances to Medical Officers for Dental work	50	26
Fees, etc., for Courses of Instruction	575	551
Medical Attendance by Private Practitioners	400	546
Pauper Burials	5	10
Upkeep of Quarantine Station, Zanzibar	825	825
Upkeep of Motor Boats	130	112
Upkeep and Maintenance of Motor Vehicles	1,070	874

Details of Expenditure—*contd*

	Approved Estimates £	Actual Expenditure £
Stationery	230	296
Treatment of Ankylostomiasis	25	—
Bicycles	30	28
Medical Training of Native Staff outside the Territory	120	116
Trypanosomiasis Research, Tinde	690	3
Contingencies	100	104
Contributions, etc.:		
Quinine for Public Purchase at Post Offices	2,500	2,315
Total Other Charges	58,554	57,008
Total Personal Emoluments	144,891	140,506
Total Departmental	203,445	197,514
Special Expenditure:		
Purchase of Motor Vehicles	200	790
Resettlement of Natives	4,470	2,054
Purchase of Duplicator	—	32
Purchase of Ventilating Equipment	—	69
Purchase of Dental Engine and Lathe	—	37
Purchase of Mobile X'Ray Unit	—	280
Purchase of Refrigerators	—	183
Grants for Special Services	—	100
Purchase of Motor Lorry	—	221
TOTAL MEDICAL	£208,115	£201,280

Details of Revenue

Revenue:	
From Hospital Fees, Sale of Drugs, etc.	8,917
Fees collected by Customs and Marine Departments for Bills of Health	1,113
Sale of Vaccine Lymph, etc. (Laboratory)	236
Fees for Mechanical Dental work	214
Total	10,480
Reimbursement by Tanganyika Railways for Medical Service	3,280
Total	£13,760

RAINFALL

Total rainfall in millimetres by stations, from information kindly furnished by the Director, British East African Meteorological Service, Nairobi.

1937

DISTRICTS	Stations	Feet above sea level	Rainfall in Millimetres
CENTRAL LINE AREA:			
Dar es Salaam	Dar es Salaam	30	1020·8
Morogoro	Morogoro	1,628	1039·2
Kilosa	Kilosa	1,606	1243·3
Dodoma	Dodoma	3,675	511·1
	Manyoni	4,096	803·2
Singida	Singida	5,233	813·6
Tabora	Tabora	4,150	1252·8
Kahama	Kahama	4,000	1013·5
	Nzega	4,000	843·4
Kigoma	Kigoma	2,562	1003·2
	Kasulu	4,530	1426·4
COASTAL AREA, SOUTH:			
Lindi	Lindi	S.L.	753·4
Tunduru	Tunduru	2,300	1221·4
Masasi	Masasi Mission	1,500	930·9
Mikindani	Mikindani	60	854·5
Kilwa	Kilwa	S.L.	1014·6
Liwale	Liwale	1,500	858·7
Rufiji	Utete	170	1022·0
COASTAL AREA, NORTH:			
Tanga	Tanga	S.L.	1410·7
Usambara	Amani	2,834	2080·9
NORTHERN HINTERLAND:			
Moshi	Moshi	2,649	1429·0
Arusha	Arusha	4,416	1504·1
Mbulu	Mbulu	5,715	1009·1
Mwanza	Mwanza	3,709	1224·8
Musoma	Musoma	3,760	1026·8
Bukoba	Bukoba	3,726	2108·0
Biharamulo	Biharamulo	4,850	1200·0
Kondoa	Kondoa-Irangi	4,615	818·4
SOUTHERN HINTERLAND:			
Iringa	Iringa	5,365	690·8
Njombe	Njombe	6,400	1061·3
Ufipa	Sumbawanga	5,650	732·9
	Rungwe	2,900	697·5
Mbeya	Mbeya	5,995	763·3
Rungwe	Tukuyu	5,300	2046·5
Songea	Songea	3,826	959·7

Return of Diseases and Deaths (In-Patients) and Diseases (Out-Patients) for the year 1937

All Races.

Note.—*Cases of infectious diseases which were admitted directly to the Infectious Diseases Hospitals, Dar es Salaam and Tanga, are not included in this Return.*

DISEASES	In-Patients				Remaining in Hospitals at end of 1937	Out-patients treated male and female	Total Cases In-and Out-Patients
	Remaining in Hospitals at end of 1936	Total Yearly		Total Cases Treated			
		Admissions	Deaths				
1. (a) Typhoid fever	7	91	20	98	11	7	105
(b) Paratyphoid fever	1	11	1	12	...	...	12
2. Typhus fever	...	4	...	4	...	4	8
3. Relapsing fever	3	501	17	504	12	1,108	1,612
4. Undulant fever	...	4	1	4	...	5	9
5. Smallpox	...	2	...	2	...	8	10
6. Measles	...	80	...	80	1	643	723
7. Scarlet fever	...	...	...	...	...	...	...
8. Whooping-cough	8	72	4	80	...	2,158	2,238
9. Diphtheria	...	...	...	...	...	...	...
10. Influenza:							
(a) With respiratory complications	...	...	...	...	...	...	...
(b) Without respiratory complications	1	493	5	494	4	3,297	3,791
11. Cholera	...	...	...	...	...	...	...
12. Dysentery:							
(a) Amœbic	5	243	22	248	10	535	783
(b) Bacillary	...	87	8	87	6	98	185
(c) Unclassified	3	187	21 51	190 525	4	760	950 1918
13. Plague:							
(a) Bubonic	...	57	33	57	...	...	57
(b) Pneumonic	...	...	...	...	...	...	...
(c) Septicæmic	...	...	...	...	...	...	...
14. Acute poliomyelitis	...	2	...	2	...	2	4
15. Encephalitis lethargica	...	1	1	1	...	...	1
16. Cerebro-spinal fever	1	200	107	201	6	1	202
17. Rabies	...	...	...	...	...	...	...
18. Tetanus	...	26	15	26	...	6	32
19. Tuberculosis of the respiratory system	48	448	93	496	42	1,521	2,017
20. Other tuberculous diseases	31	203	14	234	44	744	978
21. Leprosy	9	89	2	98	12	128	226

DISEASES AND DEATHS (ALL RACES)—*contd*

DISEASES	In-Patients				Remaining in Hospitals at end of 1937	Out-patients treated male and female	Total Cases In- and out-patients
	Remaining in Hospitals at end of 1936	Total Yearly		Total Cases Treated			
		Admissions	Deaths				
22. Venereal diseases:							
(a) Syphilis	51	1,192	19	1,243	56	22,131	23,374
(b) Gonorrhœa	40	954	8	994	42	9,718	10,712
(c) Other venereal diseases	4	176	...	180	14	1,545	1,725
23. Yellow fever	...	...	...	...	...	...	...
24. Malaria:							
(a) Benign tertian	...	63	...	63	...	759	822
(b) Sub-tertian	22	3,820	74	3,842	71	27,430	31,272
(c) Quartan	...	1	...	1	...	44	45
(d) Unclassified	5	1,149	28	1,154	20	24,571	25,725
25. Blackwater fever	...	48	18	48	1	3	51
26. Kala-azar	...	...	...	...	...	...	...
27. Trypanosomiasis	14	157	40	171	3	55	226
28. Yaws	59	1,116	2	1,175	55	72,647	73,822
29. Other protozoal diseases	...	2	...	2	...	...	2
30. Ankylostomiasis	123	2,573	241	2,696	132	12,093	14,789
31. Schistosomiasis	13	521	9	534	17	3,773	4,307
32. Other helminthic diseases	21	859	24	880	56	37,395	38,275
33. Other infectious and/or parasitic diseases	30	499	17	529	17	13,323	13,852
34. Cancer and other tumours:							
(a) Malignant	2	103	30	105	3	9	114
(b) Non-malignant	16	185	7	201	10	98	299
(c) Undetermined	7	76	2	83	3	21	104
35. Rheumatic conditions	8	245	2	253	8	7,131	7,384
36. Diabetes	...	20	2	20	2	13	33
37. Scurvy	11	243	6	254	5	104	358
38. Beri-beri	1	27	3	28	3	35	63
39. Pellagra	...	1	...	1	...	3	4
40. Other diseases:							
(a) Nutritional	2	10	2	12	1	67	79
(b) Endocrine glands and general	4	43	2	47	3	99	146
41. Diseases of the blood and blood-forming organs	12	258	28	270	21	4,857	5,127
42. Acute and chronic poisoning	...	5	2	5	...	53	58
43. Cerebral hæmorrhage	...	12	10	12	...	...	12
44. Other diseases of the nervous system	18	642	43	660	20	11,205	11,865
45. Trachoma	3	60	...	63	2	535	598
46. Other diseases of the eye and annexa	25	748	2	773	25	33,401	34,174

DISEASES	In-Patients						
	Remaining in Hospitals at end of 1936	Yearly Total		Total Cases Treated	Remaining in Hospitals at end of 1937	Out-Patients Treated male and female	Total Cases In- and Out-Patients
		Admissions	Deaths				
47. Diseases of ear and mastoid sinus	2	126	6	128	5	9,531	9,659
48. Diseases of the circulatory system—							
(a) Heart diseases	6	96	20	102	5	344	446
(b) Other circulatory diseases	13	336	18	349	16	1,587	1,936
49. Bronchitis	16	905	12	921	24	64,578	65,499
50. Pneumonia:							
(a) Broncho-pneumonia	6	279	85	285	9	238	523
(b) Lobar pneumonia	24	1,120	269	1,144	45	273	1,417
(c) Not otherwise defined	1	66	13	67	3	51	118
51. Other diseases of the respiratory system	14	579	32	593	10	11,097	11,690
52. Diarrhœa and enteritis:							
(a) Under 2 years of age	2	184	16	186	4	4,897	5,083
(b) Over 2 years of age	11	861	134	872	20	9,891	10,763
53. Appendicitis	2	74	7	76	2	20	96
54. Hernia, intestinal obstruction	34	760	42	794	32	198	992
55. Cirrhosis of the liver	3	62	15	65	2	106	171
56. Other diseases of the liver and biliary passages	4	183	31	187	10	625	812
57. Other diseases of the digestive system	16	924	18	940	11	78,653	79,593
58. Nephritis (all forms):							
(a) Acute	1	19	3	20	1	48	68
(b) Chronic	1	37	13	38	1	49	87
59. Other non-venereal diseases of the genito-urinary system	119	2,046	44	2,165	80	3,328	5,493
60. Diseases of pregnancy, childbirth and the puerperal state:							
(a) Abortion	1	63	2	64	1	39	103
(b) Ectopic gestation	...	7	1	7	1	...	7
(c) Toxæmias of pregnancy	1	17	7	18	...	44	62
(d) Other conditions of pregnancy and the puerperal state ...	6	229	23	235	2	159	394
61. Diseases of the skin, cellular tissue, bones and organs of locomotion	505	8,346	99	8,851	549	94,718	103,569
62. Congenital malformations and diseases of early infancy:							
(a) Congenital debility (children under 1 year)	4	28	10	32	1	386	418
(b) Premature birth (children under 1 year)	...	53	2	53	...	16	69
(c) Injury at birth (children under 1 year)	1	...	...	1	...	...	1
63. Senility	5	78	29	83	3	87	170
64. External causes:							
(a) Suicide	...	...	...	...	...	...	...
(b) Other forms of violence	196	3,926	163	4,122	253	41,617	45,739

Diseases and Deaths (All Races)—*contd.*

DISEASES	In-Patients				Remaining in Hospital at end of 1937	Out-patients treated male and female	Total Cases In-and Out-Patients
	Remaining in Hospitals at end of 1936	Total Yearly		Total Cases Treated			
		Admissions	Deaths				
65. Ill-defined causes	10	854	49	864	18	4,829	5,693
66. Normal labour	6	613	4	619	7	38	657
Total ...	1,618	41,480	2,152	43,098	1,857	621,590	664,688
Total cases treated by African Dispensers	70	1,325	52	1,395	50	159,801	161,196
Total cases treated by Missionaries supplied with Government drugs and equipment	11	2,919	15	2,930	...	60,078	63,008
GRAND TOTAL ...	1,699	45,724	2,219	47,423	1,907	841,469	888,892

Supplementary Table

Return of patients treated at the Infectious Diseases Hospitals, Dar es Salaam and Tanga.

Disease	In-patients				
	Remaining in hospitals at end of 1936	Admissions	Deaths	Total Cases Treated	Remaining in hospitals at end of 1937
1. Anthrax	1	9	2	10	—
2. Cerebro-spinal fever	...	31	19	31	2
3. Varicella	1	90	...	91	1
4. Diphtheria	...	2	1	2	—
5. Typhoid fever	...	4	...	4	—
6. Leprosy	27	50	7	77	32
7. Measles	...	147	1	147	—
8. Mumps	...	8	...	8	—
9. Tuberculosis (pulmonary)... ...	20	114	59	134	28
10. Whooping-cough	2	5	1	7	—
Total ...	51	460	90	511	63

Return of Diseases and Deaths (In-Patients) and of Diseases (Out-Patients) for the year 1937.

Europeans (Official and Non-Official).

DISEASES	In-Patients				Remaining in Hospitals at end of 1937	Out-Patients Treated male and female	Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1936	Total Yearly		Total Cases Treated			
		Admissions	Deaths				
1. (a) Typhoid fever	...	12	1	12	...	1	13
(b) Paratyphoid fever	...	1	...	1	...	...	1
2. Typhus fever	...	...	...	...	...	...	...
3. Relapsing fever	...	4	...	4	...	1	5
4. Undulant fever	...	...	...	...	...	...	...
5. Smallpox	...	...	...	...	...	...	...
6. Measles	...	6	...	6	...	3	9
7. Scarlet fever	...	1	...	1	...	...	1
8. Whooping-cough	...	25	...	25	...	9	34
9. Diphtheria	...	...	...	...	...	...	...
10. Influenza:							
(a) With respiratory complications	...	...	...	...	...	...	...
(b) Without respiratory complications	...	105	...	105	1	97	202
11. Cholera	...	...	...	...	...	...	...
12. Dysentery:							
(a) Amœbic	...	13	...	13	...	14	27
(b) Bacillary	...	8	1	8	1	...	8
(c) Unclassified	...	6	...	6	...	5	11
13. Plague:							
(a) Bubonic	...	1	...	1	...	...	1
(b) Pneumonic	...	...	...	...	...	...	...
(c) Septicæmic	...	...	...	...	...	...	...
14. Acute poliomyelitis	...	...	...	...	...	...	...
15. Encephalitis lethargica	...	...	...	...	...	...	...
16. Cerebro-spinal fever	...	...	...	...	...	...	...
17. Rabies	...	...	...	...	...	...	...
18. Tetanus	...	...	...	...	...	...	...
19. Tuberculosis of the respiratory system	1	2	1	3	1	3	6
20. Other tuberculous diseases	...	1	...	1	...	2	3
21. Leprosy	...	...	...	...	...	...	...
22. Venereal diseases:							
(a) Syphilis	...	1	...	1	...	11	12
(b) Gonorrhœa	...	4	...	4	...	11	15
(c) Other venereal diseases	1	...	...	1	...	1	2

DISEASES AND DEATHS (EUROPEANS)—*contd*

DISEASES	In-Patients				Remaining in Hospitals at end of 1937	Out-Patients Treated male and female	Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1936	Total Yearly		Total Cases Treated			
		Admissions	Deaths				
23. Yellow fever	...	...	...	...	...	...	...
24. Malaria:							
(a) Benign tertian	...	10	...	10	...	...	10
(b) Sub-tertian	1	521	2	522	7	263	785
(c) Quartan	...	1	...	1	...	1	2
(d) Unclassified	...	93	...	93	1	101	194 991
25. Blackwater fever	...	8	2	8	...	2	~~10~~
26. Kala-azar	...	...	...	...	...	...	...
27. Trypanosomiasis	...	1	...	1	...	...	1
28. Yaws	...	...	...	...	...	...	...
29. Other protozoal diseases	...	2	...	2	...	...	2
30. Ankylostomiasis	...	6	...	6	...	21	27
31. Schistosomiasis	...	...	...	...	...	...	...
32. Other helminthic diseases	...	5	...	5	...	24	29
33. Other infectious and/or parasitic diseases	...	12	...	12	...	98	110
34. Cancer and other tumours:							
(a) Malignant	1	6	1	7	...	...	7
(b) Non-malignant	...	2	...	2	...	7	9
(c) Undetermined	...	2	...	2	...	4	6
35. Rheumatic conditions	...	5	...	5	...	65	70
36. Diabetes	...	3	...	3	...	4	7
37. Scurvy	...	...	...	...	...	2	2
38. Beri-beri	...	...	...	...	...	...	...
39. Pellagra	...	...	...	...	...	...	...
40. Other diseases:							
(a) Nutritional	...	...	...	...	...	3	3
(b) Endocrine glands and general	...	1	...	1	...	6	7
41. Diseases of the blood and blood-forming organs	...	5	2	5	...	26	31
42. Acute and chronic poisoning	...	2	2	2	...	...	2
43. Cerebral hæmorrhage	...	...	...	...	...	...	...
44. Other diseases of the nervous system	...	36	...	36	1	98	134
45. Trachoma	...	...	...	...	...	2	2
46. Other diseases of the eye and annexa	...	13	...	13	...	116	129
47. Diseases of ear and mastoid sinus	...	9	...	9	1	180	189
48. Diseases of the circulatory system:							
(a) Heart diseases	...	5	...	5	...	23	28
(b) Other circulatory diseases	...	14	...	14	...	66	80

DISEASES	In-Patients				Remaining in hospital at end of 1937	Out-patients treated male and female	Total Cases In- and out-patients
	Remaining in hospitals at end of 1936	Total Yearly		Total Cases Treated			
		Admission	Deaths				
49. Bronchitis ...	...	20	...	20	...	121	141
50. Pneumonia:							
(a) Broncho-pneumonia	...	1	1	1	...	1	2
(b) Lobar pneumonia ...	...	4	...	4	...	...	4
(c) Not otherwise defined	...	...	...	...	...	1	1
51. Other diseases of the respiratory system	2	35	1	37	...	186	223
52. Diarrhœa and enteritis:							
(a) Under 2 years of age	...	18	...	18	...	61	79
(b) Over 2 years of age	...	45	...	45	...	105	150
53. Appendicitis	2	33	1	35	1	12	47
54. Hernia, intestinal obstruction	...	1	...	1	...	6	7
55. Cirrhosis of the liver	...	1	...	1	...	...	1
56. Other diseases of the liver and biliary passages	...	16	...	16	...	16	32
57. Other diseases of the digestive system ...	...	112	...	112	...	383	495
58. Nephritis (all forms):							
(a) Acute	...	1	...	1	...	2	3
(b) Chronic	...	5	1	5	...	9	14
59. Other non-venereal diseases of the genito-urinary system	2	78	...	80	1	159	239
60. Diseases of pregnancy, childbirth and the puerperal state:							
(a) Abortion	...	14	...	14	...	4	18
(b) Ectopic gestation ...	...	...	...	...	...	...	...
(c) Toxæmias of pregnancy ...	...	4	...	4	...	3	7
(d) Other conditions of pregnancy and the puerperal state	1	20	...	21	...	49	70
61. Diseases of the skin, cellular tissue, bones and organs of locomotion	2	96	...	98	3	484	582
62. Congenital malformations and diseases of early infancy:							
(a) Congenital debility (children under 1 year)	1	...	...	1	...	14	15
(b) Premature birth (children under 1 year)	...	...	...	...	...	...	...
(c) Injury at birth (children under 1 year) ...	...	...	...	...	...	...	...
63. Senility	...	...	...	...	...	24	24
64. External causes:							
(a) Suicide	...	...	...	...	...	...	...
(b) Other forms of violence ...	1	78	2	79	2	267	346
65. Ill-defined causes ...	1	64	...	65	1	221	286
66. Normal labour	1	75	...	76	3	13	89
Total Cases and Deaths ...	17	1,673	18	1,690	24	3,411	5,101

Annual Report of the Laboratory and Research Division for the Year 1937

STAFF

Dr H. J. O'D. Burke-Gaffney, Senior Pathologist, proceeded on leave on the 24th May 1937.

Dr D. E. Wilson, Pathologist, returned from leave on the 3rd May 1937 and relieved Dr Burke-Gaffney during the remainder of the year.

The staff of the Division during the year consisted of the following :—

Senior Pathologist : H. J. O'D. Burke-Gaffney, B.A., M.D., B.Ch.
Pathologist : D. E. Wilson, M.D., B.Ch.
Government Analyst : W. D. Raymond, B.SC., A.I.C.
Laboratory Assistant : H. Hammond.
Clerk : Maharage Juma.
Laboratory Attendants : Yohana Mkande ; John Robert ; Mesheck Ndlwana ; Zebron Nicodemus ; Bumbura Jumbe ; Alexander Kanyamala ; Augustine Sendeu.
Microscopist : Samuel Kilimali and nine subordinates.

Dr D. A. Skan, Medical Officer, was in charge of the Mpwapwa Laboratory from the beginning of the year until the 21st February, and again from the 21st July until the end of the year.

FINANCIAL

Expenditure:

	Shs	Cts
Upkeep of Laboratory	1,028	83
Upkeep of Lymph Institute	960	48
Total ...	1,989	31

This is not a full statement of expenditure, other sums being shown under departmental accounts.

Revenue:

	Shs	Cts
Laboratory fees	3,248	00
Sale of lymph to other Governments	1,200	00
Sale of vaccines and sera	266	63
Total ...	4,714	63

BUILDINGS AND EQUIPMENT

The building of the new animal houses was begun late in 1937 and the buildings were almost completed at the end of the year. The new buildings are most satisfactory and it is anticipated that a great improvement in the welfare of the animals will follow.

MOBILE LABORATORY

Owing to the difficulty of investigating outbreaks of epidemic diseases, more particularly cerebro-spinal meningitis, in the absence of field laboratory facilities, provision was made for a mobile laboratory in the 1938 estimates. The chassis has already been obtained and the body will be constructed early in 1938.

It is intended that the mobile laboratory will be equipped to deal with all the common bacteriological investigations, enabling a pathologist to take it where required at short notice. The advantages of such an addition are innumerable, and it is hoped that its establishment will add very considerably to the scope of the divisional work.

MUSEUM AND LIBRARY

Continued additions to these sections have brought forward again the problem of adequate accommodation. The available space for books and museum specimens is already full, and material for which it is not possible to find sufficient room is being stored in corners of the laboratory.

INSTRUCTIONAL COURSES FOR AFRICAN ASSISTANTS

The courses, both in the Medical School, and in the form of revisional courses at the Main laboratory, continue to prove satisfactory.

CONTRIBUTIONS BY THE STAFF TO SCIENTIFIC LITERATURE

No papers by members of the staff appeared in the press during the year, but a number are under publication.

WORK OF THE DIVISION

Work was carried out on former lines, with the addition of the establishment, in March, of a clinical laboratory in Tanga. This has proved to be of great value, and by the end of the year over 10,000 specimens had been dealt with including those for Kahn and Widal tests. The total number of specimens examined in the Division amounted to 38,881, an increase of 10,234 over 1936.

The report is divided as follows :—

- Part I.—Pathological Section.
  - (a) Main laboratory.
  - (b) Clinical laboratory, Sewa Hadji Hospital.
  - (c) Medical laboratory, Mpwapwa.
  - (d) Clinical laboratory, Tanga.
- Part II.—Lymph Production.
- Part III.—Chemical Section.
- Part IV.—Special Investigations.
- Part V.—Appendices.

PART I

PATHOLOGICAL SECTION

(a).—MAIN LABORATORY, DAR ES SALAAM

This part of the report is presented under the following headings:—

1. Parasitology.
2. Serology.
3. Other blood examinations.
4. General examinations.
5. Bacteriology.
6. Public health examinations.
7. Medico-legal examinations.
8. Pathological examinations.

1. PARASITOLOGY.

(a) *Blood films.*—Two thousand four hundred and sixty-five were examined.

	Europeans	Asians	Africans	Total
Plasmodium	157	158	312	627
Mf. bancrofti	—	2	6	8
B. duttoni	—	1	2	3
Trypanosomes	—	—	1	1
Total positive	157	161	321	639
Total negative	741	717	368	1,826
Total films	898	878	689	2,465

(b) *Faeces.*—Six hundred and eighty-two were examined.

	Europeans	Asians	Africans	Total
Ova of *Ankylostoma*	14	8	256	278
,, *Ascaris*	—	—	8	8
,, *Trichuris*	5	4	6	15
,, *Taenia*	1	—	—	1
Larva of *Strongyloides*	—	—	4	4
Flagellates	4	—	4	8
Total positive	24	12	278	314
Total negative	179	59	130	368
Total faeces	203	71	408	682

(c) *Urine.*—One hundred were examined.

	Europeans	Asians	Africans	Total
Sch. haematobium	—	—	72	72
Ova of *Taenia* (contamination)	—	—	1	1
Total positive	—	—	73	73
Total negative	2	7	18	27
Total	2	7	91	100

2. SEROLOGY.

(a) *The Wassermann test.*—Seven hundred and sixty-three specimens were examined.

Blood sera.	Europeans	Asians	Africans	Total
Positive	9	7	204	220
Doubtful	1	3	36	40
Negative	86	71	322	479
Anti-complimentary	4	—	12	16
Contaminated	—	—	—	—
Total	100	81	574	755
Cerebro-spinal fluid.—Eight specimens.				
Positive	—	—	—	—
Anti-complimentary	—	—	—	—
Negative	1	3	4	8
Total	1	3	4	8

(b) *The Kahn test.*—Seven hundred and eighty-five sera were examined.

	Europeans	Asians	Africans	Total
Positive	9	5	210	224
Doubtful	3	3	42	48
Negative	92	83	331	506
Contaminated	2	1	4	7
Total	106	92	587	785

(c) *Agglutination tests.*—Two hundred and sixty sera were examined.

	Europeans	Asians	Africans	Total
Bact. typhosum "H"	7	8	23	38
,, ,, "O"	—	—	14	14
,, ,, "H" and "O"	8	8	13	29
,, ,, "H" and *Bact. para.* A and B	5	—	8	13
,, ,, "H" and "O" and *Bact. para.* A and B	1	1	3	5
,, ,, "H" and "O" and *para.* A	1	2	2	5
,, ,, "H" and "O" and *para.* B	1	—	1	2
,, ,, "H" and *para.* A	2	—	3	5
,, ,, "H" and *para.* B	2	—	—	2
,, *paratyphosum* A	1	—	5	6
,, ,, B	1	—	3	4
,, *typhosum* "H" and "O" and *Br. melitensis* and *abortus*	—	—	2	2
Brucella melitensis and *abortus*	7	—	14	21
Positive	36	19	91	146
Negative	23	21	69	113
Total	59	40	160	259
Weil-Felix reaction (one negative)				1
Total				260

3. OTHER BLOOD EXAMINATIONS.

(a) *Blood cultures.*—Sixteen were carried out.

	Europeans	Asians	Africans	Total
Bact. paratyphosum A ...	—	—	1	1
P. pyocyaneum	—	—	1	1
Total positive	—	—	2	2
Total negative	6	1	7	14
Total blood cultures ...	6	1	9	16

(b) *Blood counts.*—Sixteen complete counts were made. Five estimations of white cells only, and one estimation of haemoglobin were carried out.

(c) *Differential counts.*—Seventy-six were carried out, fifty-seven in Europeans, eleven in Asians and eight in Africans. In addition five polynuclear counts were made, all for Europeans.

4. GENERAL EXAMINATIONS.

(a) *Faeces.*—The total examined microscopically was six hundred and eighty-two. Nothing requiring special record was found.

(b) *Urine.*—Six hundred and eighteen were examined for the presence of albumin, glucose and abnormal deposits. Albumin was found in 152 samples, casts in 18 and glucose in 51. Pus and blood cells were found in 197 samples.

5. BACTERIOLOGY.

(a) *Faeces.*—Eighty-two stools were plated: three were positive for *Bact. dysenteriae* and the rest were negative.

(b) *Urine.*—Two hundred and fifty-eight specimens were examined as under:—

	Europeans	Asians	Africans	Total
Bact. coli	83	10	2	95
Bact. aerogenes	13	4	1	18
Bact. typhosum	—	1	—	1
Alkaligenes faecalis ...	1	—	—	1
P. pyocyaneum	2	1	—	3
Gonococci	—	—	1	1
M. tuberculosis	—	1	—	1
Staphylococci	29	4	—	33
Total positive ...	128	21	4	153
Total negative ...	70	26	9	105
Total Urines ...	198	47	13	258

(c) *Sputum.*—One thousand and fifty-nine specimens were examined.

	Europeans	Asians	Africans	Total
M. tuberculosis	—	28	495	523
Pneumococci	1	2	3	6
B. influenzae	—	1	—	1
Monilia spores	1	—	—	1
Total positive ...	2	31	498	531
Total negative ...	44	378	106	528
Total specimens ...	46	409	604	1,059

(d) *Nasal and skin smears.*—One hundred and eighty-two were examined, all from Africans. *M. leprae* was found in ninety-seven smears.

(e) *Throat swab.*—Twenty-five specimens were examined.

	Europeans	Asians	Africans	Total
C. diphtheriae	1	—	—	1
Pneumococci	2	—	—	2
Streptococci	1	—	—	1
Total positive	4	—	—	4
Total negative	5	15	1	21
Throat swabs	9	15	1	25

(f) *Urethral and vaginal smears.*—Sixty-four specimens were examined.

	Europeans	Asians	Africans	Total
Gonococci	16	12	5	33
Negative	9	7	15	31
Total	25	19	20	64

(g) *Serum from penile ulcers.*—Ten specimens were examined. One smear showed the presence of *T. pallidum.*

(h) *Pus from abscesses, etc.*—Twenty-nine specimens were examined.

	Europeans	Asians	Africans	Total
Pyogenic cocci	2	—	6	8
B. anthracis	—	—	2	2
Koch-Weeks bacillus	1	—	—	1
Diphtheroid bacilli	1	1	—	2
Bact. coli	—	1	—	1
Gonococci from eye	—	—	1	1
Total positive	4	2	9	15
Total negative	4	—	10	14
Total	8	2	19	29

(i) *Body fluids.*—Thirty-nine specimens were examined.

	Europeans	Asians	Africans	Total
Meningococci	—	2	8	10
Pneumococci	—	—	4	4
Pyogenic cocci	1	2	3	6
P. pestis	1	1	—	2
Total positive	2	5	15	22
Total negative	—	1	14	15
Total cell counts	—	2	—	2
Total fluids	2	8	29	39

(j) *Vaccines.*—Eleven autogenous vaccines were prepared : Staphylococci 3 ; Mixed catarrhal 2 ; *Bact. coli* 4 ; *A. Yaecalis* 1 ; *P. pyocyaneum* 1.

The following quantities of stock vaccines and sera were issued during the year :—

Anti-meningococcal serum (25cc.)	47 phials
Anti-streptococcal serum (25cc.)	17 ,,
Diphtheria antitoxin (4,000 units)	13 ,,
Diphtheria antitoxin (5,000 units)	16 ,,
Plague vaccine (25cc.)	93 bottles
Gonococcal vaccine (1cc.)	4 phials
T. A. B. vaccine (25cc.)	46 bottles
T. A. B. vaccine (sets)	52 sets
Tetanus antitoxin (1,500 units)	91 phials
Tetanus antitoxin (8,000 units)	59 ,,
Anti-gas gangrene serum	23 ,,
Anti-typhoid serum	14 ,,
Anti-venene serum (10cc.)	3 ,,
Hay fever test outfit	1 ,,

(k) *Miscellaneous.*

Catgut for sterility test	3 all negative
Gland from cow for *M. tuberculosis*	1 negative
Serum from cyst for organisms	1 ,,
Smear from rectum for *Sch. mansoni*	1 ,,
Semen for spermatozoa	1 positive

6. PUBLIC HEALTH EXAMINATIONS.

(a) *Water examinations.*—One hundred and ninety-six samples were examined bacteriologically, one hundred and fifty from the public water supply and thirty-five from wells in Dar es Salaam. As in 1936, true *B. coli* was found on isolated occasions : (1) in the pump house on the 22nd February 1937 in 0·1cc., (2) again on the 27th February 1937 in 10cc. and (3) in the tap in the Water Supply Superintendent's office in 10cc. on the 21st December 1937. On each occasion, this was removed by local treatment and showed no evidence of persisting in the supply thereafter.

Samples were also examined as follows : Tanga 6, Korogwe 2, Lushoto 1, Lindi 1, Pugu 1. Three samples of soda water were also examined.

(b) *Rats.*—Two thousand nine hundred and thirty-six rat spleens were examined for the presence of *P. pestis*. All were negative.

(c) *Katathermometer readings.*—Katathermometer readings were made on two hundred and fifty-five days. The results are shown in Appendix I.

7. MEDICO-LEGAL EXAMINATIONS.

Fifty-three exhibits were examined. Twenty-seven were examined for blood stains. Totals of eighteen were negative, nine were positive for blood of which three were proved to be human blood.

Twenty-six stains and smears were examined for gonococci and spermatozoa (five positive for gonococci, four positive for spermatozoa and seventeen negative).

8. PATHOLOGICAL EXAMINATIONS.

(a) *Autopsies.*—Twenty-four were performed as under:—

Asians:

Intrapontine haemorrhage	1
Coronary thrombosis	1

Africans:

Acute bronchitis	1
Lobar pneumonia	3
Hanging (suicidal)	3
Arsenical poisoning	3
Ruptured spleen	1
Drowning	1
Multiple injuries (motor car accident)	1
Pulmonary tuberculosis	2
Internal haemorrhage	3
Poisoning by poisoned arrow	1
Meningoencephalitis	1
Myocardial degeneration	1
Peritonitis	1

(b) *Morbid histology.*—One hundred and thirty-three pieces of tissue were received from 117 individuals.

(1) EUROPEAN.

(i) *Neoplasms.*

Benign	Lipoma (scalp)	1
	Fibromyoma (uterus)	1
	Polypus (uterus)	1
	Cervical adenoma (uterus)	3
	Ovarian cyst	1
	Simple cyst (head)	1
	Fibro-lipoma (breast)	1
	Papilloma	2
Malignant	Fibro-sarcoma	1
	Squamous celled carcinoma	1
	Encephaloid carcinoma (breast)	1

(ii) *Other conditions.*

Blood clot	3
Acute appendicitis	1
Chronic catarrhal appendicitis	1
Endometritis	1
Normal tissue	3

(2) ASIAN.

(i) *Neoplasms.*

Benign	Lipoma	1
	Papilloma (cervix uteri)	1

(ii) *Other conditions.*

Acute toxaemia (? Plague)	1
Chronic inflammation	1
Normal tissue	1

(3) AFRICAN.

(i) *Neoplasms.*

Benign	Fibroma (uterus)	2
	Fibroma (thigh)	1
	Fibromyoma (uterus)	1
	Papilloma (penis)	1
	Papilloma (cervix uteri)	2
	Papilloma (ankle)	1
	Cheloid (leg)	1
	Adenoma (prostate)	1
	Simple cyst	1
	Haemangioma (groin)	1
	Cystic adenoma (thyroid)	1
	Foetal adenoma (thyroid)	1
	Fibro-osteoma (maxilla)	1
	Osteo-fibro-lipoma (neck)	1
	Osteoma (scapula)	1
Malignant—*Carcinoma.*		
	Squamous carcinoma (finger)	1
	,, ,, (bladder)	1
	,, ,, (penis)	1
	,, ,, (groin)	1
	,, ,, (scrotum)	1
	,, ,, (axilla)	1
	,, ,, (ear)	1
	,, ,, (scalp)	2
	Encephaloid carcinoma (breast)	2
	Carcinoma (liver)	3
	,, (stomach)	1
	,, (bladder)	2
	,, (thyroid)	1
	Secondary carcinoma (gland)	1
Sarcoma.		
	Round-celled (toe)	1
	,, (eye)	1
	,, (neck)	1
	,, (maxilla)	1
	Melanoma (thigh)	1
	,, (foot)	1
	Polymorphic sarcoma (head)	1
	,, ,, (liver)	1
	Myeloid sarcoma (head)	1
	,, ,, (wrist)	1
	Fibro-sarcoma	1
	Lympho-sarcoma (kidney, bilateral)	1
	,, ,, (spleen)	1
	Myxosarcoma (leg)	1
	Alveolar sarcoma (head)	1
	Osteochondrosarcoma (maxilla)	1

Other neoplasms.

Mixed parotid tumour	1
Teratoma (coccyx)	1
,, (ovary)	1

(ii) *Other conditions.*

Passive congestion (liver)	1
Meningo-encephalitis	3
Acute haemorrhagic pancreatitis	1
Gangrene (leg)	1
Pyaemia	2
Cerebral haemorrhage	1
Cloudy swelling (liver)	1
Necrosis (stomach wall)	1
Adenitis, pyogenic	2
Obstructive biliary cirrhosis	1
Nodular cirrhosis (liver)	1
Meningitis	2
Meningitis, tubercular	1
Granuloma, syphilitic	1
Extra digit	1
Appendicitis, chronic	1
Actinomycosis	1
Cyst (kidney)	1
Normal tissue	6
Outstanding	2

(4) MISCELLANEOUS.

Acute toxaemia (cow)	1
Lobar pneumonia (guinea pig)	1
Fibrosis of spleen (ox)	1

Summary of Examinations

Parasitological	3,247
Serological	1,808
Other blood examinations	119
General examinations	1,300
Bacteriological	1,766
Public health	3,135
Medico-legal	53
Pathological	157
Miscellaneous	3
Total	11,588

Calf Lymph Vaccine Distributed from Dar es Salaam Laboratory, 1937

	Doses
Bagamoyo	2,200
Health Office and Clinic, Dar es Salaam	18,700
Kilwa	8,000
Kidugallo	2,100
Lindi	252,500
Mikindani	1,000
Mafia	600
Minaki	200
Ngerengere	4,000
Songea	17,200
Tunduru	4,000
Utete	1,200
Zanzibar	12,000
Total	323,700

(b).—CLINICAL LABORATORY, SEWA HADJI HOSPITAL, DAR ES SALAAM

The laboratory was under supervision from the main laboratory. Dispenser Augustine Sendeu took charge of the routine work, assisted by two microscopists. Thirteen thousand five hundred and forty-two specimens were examined.

1. PARASITOLOGY.

(a) *Blood films.*

Malaria parasites	1,439
Microfilariae	170
B. duttoni	7
Total positive	1,616
Total negative	5,478
Total films	7,094

(b) *Faeces.*

Ova of *Ankylostoma*	1,125
,, *Ascaris*	29
,, *Trichuris*	36
,, *Taenia*	35
,, *Sch. mansoni*	10
Larva of *Strongyloides*	57
Flagellates	29
Total positive	1,321
Total negative	1,862
Total faeces	3,183

(c) *Urine.*

Ova of *Sch. haematobium*	234

2. SEROLOGY.

All sera were examined at the main laboratory.

3. OTHER BLOOD EXAMINATIONS.

Total counts	1
Estimation of haemoglobin	2
Differential counts	34

4. GENERAL EXAMINATIONS.

Urine.—Two thousand two hundred and eighty-nine were examined. Albumin was found in 660, glucose in 137, casts in 41 and pus and/or blood cells in 634.

5. BACTERIOLOGY.

Urine.—Gonococci were found in three specimens and pyogenic bacteria in twenty.

Sputum.

M. tuberculosis	45
Pneumococci	1
Negative	505
Total ...	551

Nasal smears.

M. leprae	6
Negative	9
Total ...	15

Urethral smears.

Gonococci	35
Coliform bacteria	15
Staphylococci	5
Negative	35
Total ...	90

Pus smears.

B. anthracis	4
Pyogenic cocci	6
Pneumococci	1
Negative	14
Total ...	25

Pleural fluid.—One was examined with negative results.

Summary of Examinations

Parasitological	10,511
Other blood examinations	37
General examinations	2,289
Bacteriological	705
Total	13,542

(c).—MEDICAL LABORATORY, MPWAPWA

The following routine laboratory investigations were undertaken in addition to the major work of the laboratory. One thousand nine hundred and eleven specimens were examined.

1. PARASITOLOGY.

	Europeans	Asians	Africans
(a) *Blood films.*			
Malaria parasites	2	24	360
B. duttoni	—	—	80
Negative	18	87	549
Total	20	111	989
(b) *Faeces.*			
Ova of *Ankylostoma*	—	—	12
,, *Ascaris*	—	—	3
,, *Taenia*	—	—	1
Larva of *Strongyloides*	—	—	6
Negative	1	2	147
Total	1	2	169

(c) *Urine.*—Ova of *Sch. haematobium*, twenty (all Africans).

2. SEROLOGY.

No routine examinations were recorded.

3. OTHER BLOOD EXAMINATIONS.

Recorded under examination of schoolboys, below.

4. GENERAL EXAMINATIONS.

Urine.—Sixty-two specimens were examined.

5. BACTERIOLOGY.

Sputa.—Twenty-seven specimens were examined. Pneumococci were found in four.

Urethral discharges.	Europeans	Asians	Africans
Gonococci	—	—	18
Negative	—	—	11
Total	—	—	29

Discharges from eyes.	Europeans	Asians	Africans
Gonococci	—	—	3
Negative	—	—	10
Total	—	—	13

Pus from abscesses.	Europeans	Asians	Africans
Pyogenic cocci	—	1	—
Negative	1	—	—
Total	1	1	—

6. MISCELLANEOUS.

Two hundred schoolboys were also examined as regards their general physique, haemoglobin content (Sahli), the presence of blood, urinary and intestinal parasites and abnormal urinary constituents. The result of these examinations is as follows:—

Malaria parasites	40
Ankylostoma	18
Strongyloides	1
Ascaris	4
Trichuris	2
Sch. haematobium	2
Albuminuria	41
Haemoglobin 90 per cent and above	88
Below 90 per cent	112
Below 80 per cent	59

Seventy-five specimens of cattle sera have been collected in the Central Province for transmission to Dr Findlay of the Wellcome Bureau of Scientific Research in connection with yellow fever investigation.

Summary of Examinations

Parasitological	1,378
Other blood examinations	200
General examinations	262
Bacteriological	71
Total	1,911

(d).—CLINICAL LABORATORY, TANGA

This laboratory was established in March in a room in the Malaria Research laboratory, now used as provincial medical headquarters. The gas-plant was available and was of great value. The laboratory was equipped from Dar es Salaam and African Dispenser Alexander Kanyamala from the Laboratory Division was posted there, together with one microscopist.

The laboratory has proved of the greatest value. Since this is the first clinical laboratory to be established by the Division without the direct supervision of a pathologist, the results in relation to extension of the scheme to other provinces are most encouraging. Ten thousand one hundred and twenty-six specimens were examined.

1. PARASITOLOGY.

(a) *Blood films.*—Three thousand two hundred and twenty-nine were examined. Thirty-one per cent were positive.

Malaria parasites	29 per cent
B. duttoni	0·2 ,,
Microfilariae	1·8 ,,
Negative	69 ,,

(b) *Faeces.*—Two thousand two hundred and thirty-five were examined. Seventy-nine per cent were positive.

Ova of *Ankylostoma*	65 per cent 145
,, *Ascaris*	3 ,,
,, *Trichuris*	2 ,,
,, *Taenia*	1 ,,
,, *Oxyuris*	0·5 ,,
,, *Schistosoma*	0·5 ,,
Larva of *Strongyloides*	6 ,,
Flagellates	1 ,,
Negative	21 ,,

(c) *Urine.*—One thousand five hundred and eight were examined.

Sch. haematobium ova	16·7 per cent

2. SEROLOGY.

Kahn test.—Two hundred and fifty-three specimens were examined. 49·1 per cent were positive.

Widal test.—Twenty-six were examined. 1·3 per cent were positive.

3. OTHER BLOOD EXAMINATIONS.

Blood counts.—Fifty-five were undertaken.

4. GENERAL EXAMINATIONS.

Urine.—One thousand five hundred and eight were examined. Albumin was found in 15·6 per cent, and sugar in 4·6 per cent.

5. BACTERIOLOGICAL.

Sputum.—Nine hundred and forty-one were examined. *M. tuberculosis* was found in 12·4 per cent.

Nasal smears.—Thirty-one were examined. M. leprae was found in 22·5 per cent.

Urethral smears.—Two hundred and thirty-three were examined. Gonococci were found in 51·5 per cent and *B. coli* in 17·5 per cent.

Fluids.—One hundred and four were examined of which 99 were cerebrospinal fluids. Meningococci were found in 39·6 per cent of the latter.

Pus.—Three smears were examined.

Summary of Examinations

Parasitological	6,972
Serological	279
Other blood examinations	55
General examinations	1,508
Bacteriological	1,312
Total ...	10,126

TOTAL EXAMINATIONS, PATHOLOGICAL SECTION

Parasitological	22,108
Serological	2,087
Other blood examinations	411
General examinations	5,359
Bacteriological	3,854
Public health	3,135
Medico-legal	53
Pathological	157
Miscellaneous	3
Total	37,167

PART II

LYMPH PRODUCTION, MEDICAL LABORATORY, MPWAPWA

STAFF

Dr D. A. Skan, Medical Officer, was in charge of the Laboratory from the beginning of the year until the 21st February and again from the 21st July until the end of the year. Mr G. V. Sakrikar, Sub-Assistant Surgeon, was in charge from the 21st February to the 21st July. During the latter part of September and during October the Medical Officer was employed on cerebro-spinal meningitis duty in the Kilosa district. The African staff consisted of an African Dispenser assisted by three orderlies and three labourers.

The manufacture and distribution of vaccine lymph was the chief function of the laboratory, details being as follows:—

	1935	1936	1937
Calves vaccinated	56	129	123
Total pulp in grams	1,657	4,843	3,707·4
Average yield per calf	29·6	37.5	30·1

The lymph was not collected from six calves and two calves did not take. In July, a vaccine calf was found to be suffering from rinderpest and this was the first case of what was afterwards discovered to be a formidable epidemic of rinderpest widespread throughout the Central Province. At this time it was noted that an attack of rinderpest did not affect the yield of vaccine lymph and that calves actively immunized against rinderpest showed no immunity to vaccinia.

ISSUES AND DISTRIBUTION

During 1937, 810,450 doses were issued as compared with 939,950 doses in 1936 and 962,650 in 1935. Provincial distribution was as follows:—

Central	43,750
Western	63,900
Eastern	51,100
Northern	59,900
Lake	149,200
Southern Highlands	189,700

A total of 252,900 doses were issued to Dar es Salaam for distribution to the Tanga and Southern provinces.

PART III

CHEMICAL SECTION

During the year, one thousand seven hundred and fourteen samples were received, showing a further increase on the number submitted in previous years (1935=1,475, 1936=1,232) in spite of efforts to limit the work in certain directions. It is becoming increasingly difficult to handle this volume of work. The samples can be classified thus :—

Milks	798
Human milks	2
Condensed milks	71
Alcoholic liquids	105
Water	182
Bloods (biochemical)	101
Urines (biochemical)	183
Miscellaneous biochemical	12
Viscera and poisons	45
Poisoned arrow and arrow poisons	20
Drugs	11
Native medicines	38
Bloodstains	25
Livers for vitamin assay	35
Miscellaneous	86
Total ...	1,714

These were received from the following departments: Administration, Agriculture, Customs, Medical, Police, Public Works, Railway and Veterinary.

A few points of special interest are dealt with below.

FOODSTUFFS

Four hundred and eleven samples of milk were purchased in the Dar es Salaam township during the year, and of these, five contained less than 3 per cent of fat and ten contained less than 8·2 per cent of non-fatty solids, making the percentage of samples presumed to be adulterated 3·6. An increase is noted in the samples giving low fat figures which indicate skimming. Seventy-five samples were received from Tabora and twenty-five of these contained less than 8·2 per cent non-fatty solids, six of the twenty-five samples also falling below the fat standard. This shows only a slight improvement on the position recorded for Tabora last year.

WATERS

The Dar es Salaam supply has been under examination with special reference to the deposits and growths in the mains. The deposit in the mains is largely iron oxide although manganese oxide is also present. Analyses of the dried material forming the deposits are as follows :—

Table I Hard Material deposited on Mains

	Per cent by weight
Bitumen, carbon dioxide, combined water	15·4
Silica and insoluble matter	7·6
Iron oxide with some alumina	76·5
Magnesium, calcium, manganese	traces only
Total ...	99·5

Suspended deposit in washings from the main

	Per cent by weight
Combined water carbon dioxide	22·9
Iron oxide with some alumina	40·2
Silica and insoluble matter	20·7
Manganese (Mn_3O_4)	7·6
Calcium	present
Total ...	91·4

The immediate cause of the deposit appears to be activity of iron bacteria, the main offender being *Didyomohelix ferruginea* or a closely related organism. These bacteria grow both in solutions containing iron and in iron-free media but they produce ugly deposits only when either iron or manganese is present. The composition of the original water has therefore been under investigation and the most important conclusion arrived at is the variation in composition of the water from the different boreholes. This variation is suprising in view of the fact that the boreholes are believed to cut the same water bearing strata. Yet, as far as samples have been submitted, no large quantities of iron or manganese have been discovered in any of the boreholes. The amount present in the supply is roughly ·005 parts of iron per 100,000 and ·003 parts of manganese per 100,000. The quantities are too small to be removed by any zeolitic material. The point which arises in connection with these results is how such small quantities of iron and manganese can cause trouble in the mains. The higher prevailing temperature, so favourable to the growth of bacteria, is no doubt a factor of some importance, but the question of the augmentation of the iron content of the water by corrosion of the pipes has also to be considered.

The best answer to the question as to what degree of corrosion is occurring in the mains is supplied by removal and examination of lengths of mains. So far this has only been done in the areas of slower flow. Some degree of corrosion was noted, but this was a relatively unimportant practical problem compared with the much more important choking of the mains by the concretion of iron deposits, which greatly reduce the effective bore of the main. It would be expected that in the areas of faster flow the corrosion would be greater and the deposition less. The deposit formed is loose and of low density compared with the iron lost from the main by corrosion effects.

According to Speller, one of the leading authorities on corrosion, the factors in order of importance likely to cause the corrosion of steel immersed in water of pH 4·3 – 10·1 are as follows :—

Oxygen concentration.
Protective films.
Hydrogen ion concentration.
Composition of metal.
Hydrogen over voltage.
Metal ion concentration.

The oxygen concentration of the water was measured at various points in the water system and at various times. The following are the results obtained :—

Table II Tests all at 2 p.m.

	mgm. 0/litre
Point A. Water Supply Office	5·2
Point B. AB approximately 2,800′	3·3
Point C. Oyster Bay AC 19,700′	2·1

These figures show a steady fall in oxygen concentration due, it is suggested, to corrosion.

Table III Early morning

	mgm. 0/litre
Borehole	0·2
Pump house	0·4
Point A	3·7

These figures show that the oxygen is not present in the original water but is absorbed owing to the fall of water in the tanks and its exposure to air.

Table IV Variations on the same day at Point A

	mgm. 0/litre
Early morning tank full	4·1
9.30 a.m. 8′ 3″	4·5
2.00 p.m. 6′	5·0

These figures show the effect of the fall of water, the inlet for which is situated near the top level of the tank, in increasing the oxygen absorption. The higher temperature at 2. p.m. should cause less oxygen absorption, but the figures quoted clearly reveal that the fall of water into the tank is a factor in causing oxygen absorption. Measures to prevent absorption cannot but be beneficial whatever interpretation is given to the figures in Table I. For comparision it may be remarked that at 90°F water will absorb approximately 7·1 mgm. 0 per litre.

Investigation of actual lengths of main removed from slow moving areas gave the following data :—

Table V

1. Loss in weight of pipe oz. per foot	$1\frac{3}{4}$oz.
2. Scale removed per foot	10oz.
3. Loss in effective volume	$12\frac{1}{2}$%
4. Character of scale	Soft : composition mainly oxides of iron.

The actual figure under 1 in Table V is not significant owing to normal variations in the weight of piping. The visible corrosion was definite but slight. The loss in effective volume does not convey an adequate idea of the loss of efficiency, since at points the pipe was almost arched over. It would be interesting to compare these results with those obtained on a section of pipe having a more rapid water flow. The effect of velocity of flow on the corrosion of bare piping is given below :—

Temperature 80°F., ½″ steel pipe, Pittsburg tap water

Velocity ft/sec.	Average penetration ins. per year
0·1	less than ·01
0·5	·03
1·0	·15
2·0	·22
4·0	·23

The curve of corrosion plotted against velocity rises sharply and then becomes flat. It is estimated that the rate of flow in the Dar es Salaam mains does not rise above 3 or 4 feet per second, and that the average flow in the fastest moving areas would be about 1 ft/sec. Any corrosion would be expected in the faster moving areas.

The pH of the water supply varies from about 7 to 8 due probably to a varying carbon dioxide content. Carbon dioxide only causes corrosion if it is present in an "aggressive" form, and laboratory work has shown that the gas is not present in this form in the Dar es Salaam supply.

Another factor present locally which may affect the corrosive nature of the water is the presence of dissolved salts. These are known to increase the corrosive effect of the water. But more important still is the rising salinity of the water supply, an increase which has been occurring over a number of years and to which full reference was made in the laboratory annual report for 1936. Examinations have recently been completed of surface waters as alternative supplies. These contain some 4 to 6 parts per 100,000 of chlorides calculated as chlorine, compared with the figure of about 44 for the general supply. As the removal of some of this surface water may be beneficial in the malaria drainage scheme, the utilization of this alternative supply to reduce salinity is worthy of more detailed consideration.

Certain recommendations of a practical nature have been made to reduce the solution of oxygen. The use of some form of chlorination, preferably the chloramine process, should cause an improvement by reducing ferruginous growths, and, as the chlorination of the supply is desirable on bacteriological grounds alone (see pathological, section of this report), there should not be any difficulty in adopting the scheme.

METHYLATED SPIRITS

In February of this year the method of denaturation with caouchoucine referred to in the 1934 report was adopted. Import figures (excluding Government imports) from February to December 1937 were 2,945 gallons compared with 6,177 gallons in the corresponding period in 1936. No samples of methylated spirit from cases of methylated spirit drinking were submitted for examination during the latter part of the year.

POISONING CASES

Material from 32 human deaths was received and can be classified thus :—

Non-native (2) : Opium, 1; Massive dose of quinine, 1; Native (30) : A possible cause of death was established in nineteen of these thirty cases as follows : In six cases arsenic was found in amounts suggesting that death was due to acute arsenical poisoning. In three cases death was due to poisoned arrows : the arrows were coated with *Acocanthera* poison. In one case alkaloids of the mydriatic group were isolated. In one case death was due to a corrosive acid, probably sulphuric acid.

The remaining cases in which a probable cause of death was reported concerned native plant material. In three cases species of wild cucumbers (two from *Cucumis ficifolius* and one from *Cucumis aculeatus*) were apparently the cause of death. Work has been done in South Africa on this genus, and material isolated from Tanganyika species seemed closely related to the active principle isolated in South Africa. One case was concerned with a species of *Adenia* toxic to animals. A number of deaths were reported as due to eating in error *Dioscorea sansibarensis*. One death was due to *Courbonia camporum*, a reference to which plant was made in the 1935 Annual Report. In one case death was probably due to a species of Euphorbia, reference to the toxic nature of which has been made in previous reports. Three cases of animal poisoning were investigated with negative results. In addition to these cases one case of poisoning was reported from Kenya Colony. The plant material submitted was identified as *Phytolacca dodecandra* l'Herit, to which reference was made in the laboratory report for 1935.

OTHER MEDICO-LEGAL WORK

A shot gun was received for identification during the year. A Somali was reported to have shot and killed a raider who attempted to steal cattle. After the event the body was carried some distance away, presumably in an effort to evade responsibility for the crime. Marks on the cartridge case found on the scene of crime were shown to correspond to those on a control round fired from the gun suspected to have been that employed. The case was illustrated by photo-micrographs.

NATIVE MEDICINES AND POISONS

A survey of the arrow poisons of Tanganyika has been started. Considerable assistance, which is gratefully acknowledged, has been received from administrative officers and others in the collection of material and notes. Gratifying progress has been made in the methods of examination to be adopted. The whole investigation at present is in an incomplete state so that a consideration of the results obtained will be deferred to a future occasion.

The value of an existing index of African medicines, covering about one thousand drugs, has been proved on several occasions. A large proportion of odd specimens submitted has been identified and information concerning their local uses and in some cases their active principles has been furnished to enquirers.

A further and large sample of human milk from a case of induced lactation was received from Mr and Mrs A. T. Culwick. The analysis showed a normal composition for late human lactation.

An interesting specimen of what was identified at Amani as *Rapanea rhodendroides* was received from Kenya Colony. From the seeds of this plant, stated to be employed for the treatment of taeniasis, crystals were isolated which had the melting point and chemical properties of embelic acid. Every local species of the *Myrsinaceae* has now been reported to be employed in Tanganyika as an anthelmintic. Various species of embelia have acquired a reputation for the treatment of taeniasis and are known to contain embelic acid. The question whether any useful investigation of the family could be made would appear to merit consideration.

A sample of a locally famed African cough cure was received from Kenya Colony. A small amount of an essential oil was isolated but no other substance of pharmacological activity was found.

NUTRITION

Little progress has been possible under this head owing to the lack of assistance. Work on the vitamin A content of livers was discontinued owing to the pressure of other work.

Advice and experimental work was carried out for the Medical Officer, Chunya, in connection with the outbreak of scurvy in his area. The vitamin C content of various local fruits was determined by titration and advice was tendered regarding methods of preserving lemon and orange juice without the employment of chemical preservatives. The following are the contents of vitamin C found in some of the specimens examined :—

Fresh lemon juice (from six fruits purchased in the Dar es Salaam market. Percentage of juice V/W 30·2 to 42·8 per cent). Ascorbic acid 0·41 mgm/ml juice.

Fresh orange juice (six fruits 46·2 to 54·1 per cent W/V juice). Ascorbic acid 0·58 mgm/ml juice.

		mgm/ml.
Bottled orange juice (manufacturer A)	Ascorbic acid ...	0·66
Lemon juice (manufacturer A)	,, ,, ...	0·27
,, ,, B)	,, ,, ...	0·25

Bottle orange juice 7 months old, ascorbic acid 0·59 mgm/ml.

Samples of orange juice were also concentrated by direct heating and by heating under reduced pressure. The character of the resultant products was as follows :—

Direct Heating.—Viscid orange-brown syrup : Vitamin concentration increased approximately 500 per cent. Loss of vitamin during concentration about 20 to 25 per cent.

Concentration in Vacuum.—Yellow semi-solid mass :
Vitamin concentration 1,500 to 2,000 per cent.
Vitamin loss about 9 per cent.

Local dried fish were examined as a possible cheap source of first-class protein and vitamin A, for local labour. The vitamin present was determined spectrographically in the modified Hilger apparatus (Vitameter A). The fish from Chunya and Morogoro contained 25 to 30 per cent of fat, and was a moderately good source of vitamin A (say 1+). The carotene and acid content of several samples of palm oil were determined.

MISCELLANEOUS

A course of lectures on elementary science was delivered to student dispensers, and examinations were set and marked. All the candidates were passed. One previous failure was re-examined.

The explosion of a drum of acid was traced to an error on the part of the consignor who had put dilute sulphuric acid into iron drums. Advice was tendered to various government departments on chemical problems.

PART IV

SPECIAL INVESTIGATIONS

Continued staff shortage and the large increase in the amount of routine work—which exceeded that undertaken in 1936 by some nine thousand specimens—precluded any possibility of research work in the pathological section during the year.

Certain special work is, however, referred to in the report of the Government Analyst who has succeeded, despite the heavy burden of routine work, in continuing his researches in connection with arrow poisons, native drugs and kindred subjects. Until such time as an increase in personnel and accommodation becomes a practical possibility, there remains little prospect of this Division serving any extensive purpose other than that of a routine laboratory service.

Whilst long-range research is no doubt embodied in the schemes already on foot regarding the centralization of East African research, there remain—and in the writer's view will continue to remain—innumerable minor, though important, field problems of a local nature, only capable of solution by workers experienced in local conditions working departmentally on the spot. Such problems are likely to remain outside the larger compass of a long-range research scheme, and must inevitably continue to be unsolved so long as existing laboratory facilities are limited. The mobile laboratory at present under construction should prove of considerable assistance in solving some of our field problems, provided that a full-time officer becomes available to conduct it.

APPENDIX

Katathermometer Readings, Dar es Salaam. *Taken daily at 9 a.m. in a laboratory room under constant conditions*

MONTH	Highest Kata	Air Temp. °C.	Day	Lowest Kata	Air Temp. °C.	Day	Mean Kata	Mean Air Temp. °C.
January	10.2	31·0	7th	5·9	30·3	28th	8·1	30·3
February	9·2	29·0	1st	5·6	30·5	8th	6·6	30·6
March	9·6	32·0	31st	5·6	30·2	16th	7·6	30·2
April	14·9	26·5	24th	7·4	28·5	21st	8·8	27·5
May	12·2	25·0	10th	7·3	28·5	20th	9·7	28·1
June	10·3	26·0	12th	8·1	26·0	16th	8·7	25·6
July	10·0	23·5	17th	6·6	25·0	8th	8·1	24·6
August	10·0	26·0	19th	8·0	24·0	9th	8·1	25·6
September	10·5	27·5	20th	7·6	27·0	27th	9·2	26·8
October	11·0	27·5	4th	7·2	28·0	22nd	8·7	27·26
November	10·7	28·75	9th	6·8	30·0	16th	8·3	28·28
December	9·6	28·5	6th	6·7	28·0	15th	7·4	29·0

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